ADPRO® PRO Series

PIR PIDS — Passive Infrared Perimeter Intrusion Detection Systems

Planning and Commissioning Manual

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ADPRO® by xtralis™

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Document Conventions

The following typographic conventions are used in this document.

Convention	Description
Bold	Used to denote: emphasis Used for names of menus, menu options, toolbar buttons
Italics	Used to denote: references to other parts of this document or other documents. Used for the result of an action

The following abbreviations are used in this document.

Abbreviation	Description
AA	Aperture Angle
CZ	Creep Zone
DR	Detection Rate
ESD	Electrostatic Sensitive Device
FAR	False Alarm Rate
GND	Ground
QSG	Quick Setup Guide
PID	Perimeter Intrusion Detector

PIDS	Perimeter Intrusion Detection System
PIR	Passive Infrared

The following icons conventions are used in this document.

Convention	Description
	CAUTION! This icon is used to indicate that there is a danger to equipment. The danger could be loss of data, physical damage, or permanent corruption of configuration details.
	WARNING! This icon is used to indicate that there is a danger of electric shock. This may lead to death or permanent injury.
	WARNING! This icon is used to indicate that there is a danger of inhaling dangerous substances. This may lead to death or permanent injury.
	DANGER! This icon is used to indicate that there is a danger of falling down! There is acute danger, when working with unsecured ladders. Unsecured ladders can slip and cause a fall that can lead to serious injuries. Additional information: refer to local „Safety at Work Act“.
	NOTE! This icon is used to highlight useful advice and recommendations as well as information for an efficient and trouble-free operation.

Tradename statement

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Contact Us

The Americas +1 781 740 2223 Asia +852 2916 8876 Australia and New Zealand +61 3 9936 7000

UK and Europe +44 1442 242 330 Middle East +962 6 588 5622

www.xtralis.com

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1 General

1.1 Information about this Manual

Use of the Manual

This manual allows the safe and efficient installation and handling of the device. A prerequisite for proper function of the device is to comply with all the information and the instructions in this manual.

Obligation to read

This manual must be read carefully before the installation of the device.

Images in this Manual

Images in this manual are provided for basic understanding only and can vary depending on the version of the device.

Loss of the Manual

In the event of loss of this manual, a replacement can be ordered from Xtralis. See page ii for contact details.

Information in this Manual

The information and safety instructions in this manual have been compiled in accordance with current standards, guidelines and rules, using the latest technology and they are based on many years of experience.

The scope of delivery or the performance of the device may vary depending on optional order items, production of special versions or the latest technical modifications to the descriptions and representations given here.

1.2 Warranty

Location

The terms of warranty are set out in the purchase agreement and the general terms and conditions of the manufacturer.

In Principle

The manufacturer will make the final decision with respect to a warranty claim relating to the return of any defective parts, possibly after visiting the site.

The warranty period of the device is not extended through the replacement of defective parts.

Any changes or major repairs by the user or a third party without the written consent of the manufacturer will nullify the warranty.

1.3 Customer Service and Product Monitoring Service

Customer Service

In case of problems and issues that cannot be solved by using this manual and for technical information, contact our customer service. See page ii for contact details.

Product Monitoring

With the aim of continuously improving our products, we are interested in learning about experience gained from using the device.

We welcome information about experiences in dealing with device malfunctions during operation.

Please always inform the manufacturer in the event of accidents or near misses.

2 Safety

This chapter gives an overview of all important aspects of safe and trouble-free use. Failure to observe the instructions and warnings in this handbook can lead to injury or death.

2.1 User's Responsibility

General	The instructions in this handbook are for the safety of the user and the prevention of accidents. Environmental regulations that may apply to the location of the unit must also be observed.
Perfect technical condition	To guarantee perfect technical condition the advice on maintenance in this handbook should be followed.

2.2 Personal Requirements and Qualifications

In this handbook the following qualifications for various tasks will be assumed:

Electricians	Electricians have the training, experience and knowledge of standards, regulations and procedures that qualify them to work on electrical systems knowing the relevant risks.
System Integrators	Qualified system integrators have the training, experience and knowledge of standards, regulations and procedures that qualify them to work on IT systems knowing the relevant risks.

2.3 Intended Use

The unit should not be used in areas where there is a danger of explosions or where dangerous substances are used.

3 Description and Introduction

The detector enables motion detection based on infra-red technology and high-precision mirror optics. The unit registers differences in temperature between mobile objects and a stationary background. The alarm threshold of the detector can be adjusted to external factors such as ambient conditions. Interference can be filtered out by sophisticated signal analysis.

The detector is available in models with nominal ranges up to 150 m in length and 30 m in width. Curtain detectors, for use in narrow areas over long and medium ranges give uninterrupted coverage of detection. Volumetric detectors monitor the whole of a field of vision. Full technical information on all available models is given in chapter 16.

4 Transportation, Packaging and Storage

4.1 Transportation

NOTE!

To avoid damage, the unit should be transported in its original packaging.

4.2 Packaging

- **Packaging**

The unit is packaged for normal transportation and storage conditions. All the material used in the packaging is environmentally friendly. The packaging protects the unit from damage in transit, corrosion and other damage. The packaging should therefore not be destroyed but simply removed before installation.

- **Handling of the packaging**

If the packaging is no longer needed, it must be disposed of properly in accordance with applicable laws and local regulations.

WARNING!

Environmental damage can be caused by improper disposal!

Packaging materials are valuable raw materials that can often be reused or recycled, so dispose of them in an environmentally friendly way, and comply with local disposal regulations.

- **Unpackaging**

The detector is typically delivered as a standalone product together with a Quick Setup Guide (QSG); no further documentation is included. Documentation and utilities such as the latest version of this ADPRO PRO PIR Planning and Commissioning Manual, the ADPRO PRO PIR data sheets, ADPRO PRO PIR brochures are available for download from the www.xtralissecurity.com **Xtralis Security Solutions Support Site**.

Please unpack the detector heeding customary Electrical, Electrostatic Sensitive Device (ESD) and safety precautions and proper grounding.

CAUTION!

Disassembling the detector can cause permanent damage and will void the warranty.

Operating the detector outside of the specified input voltage range or the specified operating temperature range can cause permanent damage.

A detector contains electrostatic discharge sensitive electronics and should be handled appropriately.

5 Planning – Notes

Perimeter ('peri', from the Greek for 'round about') security measures have been in use for centuries, if not for millennia. Spears, palisades, walls and moats have all been used as effective defensive measures.

These generally very effective perimeter security mechanisms were intended not to let potential attackers get close to the actual physical barriers (such as drawbridges or castle walls), or at least to make this difficult for them. From very early on, then, measures were taken and defensive force was used.

Current, modern perimeter security measures differ only in the measures (fences) and devices (detectors) used from a historical castle moat. Not in the basic **principle of a concept of protection**.

In addition to mechanical security systems, a variety of electronic detection and verification measures are now available. Together with well-planned organisational measures, it is therefore possible to make a real contribution to protection from unauthorised access, theft, robbery, burglary and sabotage attacks such as arson.

But such systems can also be used for the protection of life and limb. An example of this might be a deer crossing warning system which, in conjunction with electronic traffic lights, prevents accidents. Or a monitoring system for platforms at transit stations, so that no one is endangered by the suction of air from passing trains.

These non-binding planning notes are intended as a guide for insurance companies, consultants, specifiers, layout engineers, judges, integrators, and of course users, to show how through carefully planned perimeter security systems a reduction in risk in anticipation of any possible threat can be achieved, as part of a wholistic plan for property security.

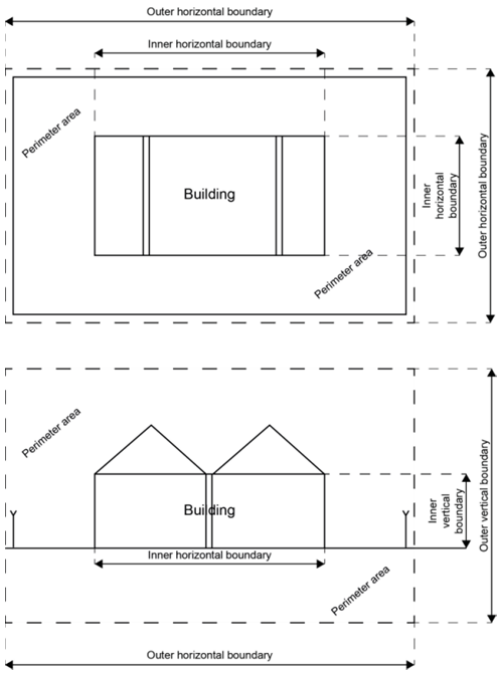
Because of the diversity and uniqueness of the sites and objects to be secured, and their individual environments, the following can only go into the fundamentals. Possible solutions and concepts will be presented by means of typical and commonly occurring cases.

5.1 Fundamental Analysis

5.1.1 Perimeter – Definition

For the purpose of these planning notes, a perimeter is an environment, generally of a building, area or an industrial plant (such as oil wells, water tanks, solar power facilities, transmission masts, logistic or distribution center, car dealer); the borders of this environment; or focal points within this environment. Extending in the horizontal plane, the legal boundary of the site is the furthest limit of the perimeter. An inner boundary (which there necessarily need not be) can be formed by a building, a facility or similar, that is situated within the range of the legal boundary. External walls of buildings within the perimeter can also stand for inner boundaries; parts of the interior of buildings can also count for the perimeter range. The perimeter also has vertical, legal boundaries. Depending on the risk situation, it may be necessary to have perimeter surveillance in the vertical plane (extending up or down).

These diagrams show the arrangements of the boundaries.



Schematic based on "VdS Security Guideline Perimeter VdS3143 (on the authority of VdS, Cologne)"

5.1.2 Applications not Covered

These planning notes describe options that can offer security against hostile outsiders, and refer to industrial or infrastructure facilities, depending on the risk situation. They do not refer to the most at-risk facilities such as power stations, including nuclear power stations, military installations or prisons.

Personal protection measures are not discussed in the course of this policy.

NOTE!

For this, we advise you to call us personally.

5.1.3 Performance Capabilities of Perimeter Security Systems

Because of technology, no perimeter security system can give 100% reliable protection. Therefore, the operator of the facility must be informed of the performance limits of the chosen measures.

Since the electronic devices of the perimeter security system are permanently set to the surrounding environmental conditions, it can sometimes lead to limitations in the performance capability of the facility if no corresponding countermeasures are taken.

Basically, it can be stated that higher detection sensitivity leads, as a rule, on the one hand to a very high detection rate (DR), but on the other hand to a high probability of false alarms with a large false alarm rate (FAR).

One significant value for the quality of perimeter security is the DR/FAR ratio; the closer the value to 1, the better the quality of the system.

5.1.4 Interoperability with other Security and Safety Systems

Perimeter security systems must be included from the start as part of a comprehensive plan, to ensure as seamless as possible an interaction of security systems.

If, for instance, intrusion detectors and/or video surveillance cameras are planned or are already in place, ADPRO detectors can be integrated without difficulty.

For this purpose, the wiring (number of wires, cable length, cable channels, cable lengths, interfaces) must match exactly. What information is needed for what system should be specified.

5.1.5 Object Location (Site Position) and Environment – Analysis

5.1.5.1 Threats – Risk – Scenarios – Probabilities

Many commercial sites and industrial buildings, and related open spaces like distribution centres and garages with large open spaces, goods and equipment storage areas, or scrap yards, do not present too great a challenge to potential criminals.

In times of economic crisis, these outlying places present a particular incentive for criminal enterprises, and can lead to risks if unauthorised and unnoticed access takes place. Due to the increasing interdependency of modern business processes even small disruptions can lead to considerable financial damage.

As part of a comprehensive security plan, building security focuses on the protection of the contents. The use of mechanical perimeter security measures in combination with an electronic security system is now well known and widely accepted. So a comprehensive security plan begins right at the boundary of the property.

The concept of comprehensive security must now be analysed in detail.

1. Threat Analysis

This includes the identification of possible threats and offender profiles, the assessment of possible damage, and the estimation of the probability of an accident. Owners themselves, landlords, lenders, police, the fire brigade and future insurers must be included in the planning.

2. Threat Scenarios

As part of these planning notes, the following scenarios are conceivable:

- Theft of existing goods from the premises
- Breaking into buildings
- Sabotage or vandalism of operational facilities
- Espionage
- Arson

NOTE!

Risks to people's lives and hostage takings are not discussed in these planning notes.

3. Offender Profiles

With regard to the previously mentioned threats the following different offender profiles can be assumed:

- Opportunistic Offender

  Who seizes an opportunity to gain something as a means of payment, or of value in itself (drug-related crime), or who commits vandalism, such as spraying graffiti, setting fires, or sabotage.

- Professional Criminal

  An individual, or gangs, which are characterised by their targeted approach (such as the purchase of specialised car parts according to serial number, targeted theft of recycling, sabotage or espionage).

4. Offenders' "qualifications", or level of performance of a security system, according to European Standard EN 50131-1

- Grade 1: Low Risk

  An intruder or robber has little admitted knowledge of the security system; he has a limited number of readily available tools.

- Grade 2: Low to Medium Risk

An intruder or robber has little admitted knowledge of the security system; he has generally available tools and portable instruments such as a multimeter.

- Grade 3: Medium to High Risk

An intruder or robber has admitted that he is familiar with security systems, and has an extensive inventory of tools and portable electronic devices.

- Grade 4: High Risk

This level is used when security takes priority over all other factors. An intruder or robber has admitted having the ability to plan a burglary or robbery in detail, and has a complete kit including the means of substituting one component of a security system for another.

NOTE!

In these levels, the word 'intruder' is used to include all types of threat, such as robbery or the threat of physical violence, which could affect the planning of a security system.

5. Types of attack on a perimeter security system

- Walking, running or jumping:

An intruder tries to cross a boundary by walking or running. This usually occurs in case of systems where there is no barrier or fence.

- Climbing:

An intruder tries to get over the system by climbing directly over it. This applies only to systems with barriers. The areas under surveillance of these systems cannot be climbed into without assistance. A deferred detection system 'assumes' that an intruder has entered by climbing, but entry might have been effected by cutting.

- Cutting:

As with climbing, a barrier is required for this occurrence to be recognised. The explanation is similar to 'climbing'. Because of technology, PIR detectors cannot detect cutting of the perimeter. However, the system can be planned so that manipulation of fences, and above all subsequent penetration, can be securely detected. The right choice of detector output is particularly important here.

- Ladders:

'Ladders' is used here to mean all aids to elevation (such as a tall lorry parked near a barrier). Two ways of surmounting a barrier with a ladder are to be distinguished:

  - Use of a ladder that makes contact with a barrier (leaning ladders)
  - Use of a ladder that makes no contact (a stepladder)

Because of technology, the PIR detector cannot detect the actual surmounting of a barrier. Nevertheless, a system can be planned so that this type of attack and subsequent invasions can be safely detected, provided the right detector has been chosen. Again, careful planning of the system has a significant effect on the detection of events and the false alarm rate. In contrast to other detection technologies, both leaning ladders and stepladders are well known as aids to elevation.

- Tunneling underground:

It is generally assumed that tunnelling under a barrier can in principle only be detected by a ground detection system, because these are the only systems installed directly into the ground. Because of technology, the PIR detector cannot detect tunnelling under a barrier. But since the intruder has to come up to the surface to accomplish his purpose, the system can be planned so that this type of attack, and subsequent passage through the monitored area, can be safely detected. Here, too, the right choice of detector is particularly important.

- Driving through:

This is comparable to walking or running, but it involves greater speed and greater mass. Because of this higher energy, in contrast to walking or running, a barrier can be broken down. In some cases, because of technology the PIR detector cannot

detect a barrier's being driven through, precisely because of too high a speed. But since the invader has to come to a standstill to accomplish his purpose, the system can be planned so that this type of attack, and in particular subsequent passage through the monitored area, can, again, be safely detected. Here, too, the right choice of detector, and the number and strategic placement of the detectors, is especially important.

5.2 Planning – Key Points

5.2.1 Nature (Grass, Trees, Animals)

In planning perimeter monitoring with ADPRO detectors, take note of the following points:

- The area to be covered should have no moveable objects such as trees, branches, shrubs, lawns with long grass, fences or bodies of water.
- When you inspect the property, look out for animal holes such as foxholes, badgers' setts, rabbit warrens, etc., in the vicinity of the barrier. Ask the user of the property about this.

5.2.2 Traffic (Vehicles, Equipment, Persons)

It must be noted here that the nominal range stated is such that a person or object of height 1.5 m can be detected. This necessarily means monitoring of more than the area to be covered, so long as it is not artificially limited.

- Do not set up one single detector on a wire or metal fence, and especially not beyond a fence.
- In order to avoid false alarms caused by passers-by, the range of coverage should be limited by a natural or artificial background (such as a wall).
- Vehicles, in particular large ones that produce a lot of heat (lorries, tractors, harvesters, etc.) and other equipment (diesel generators for power systems, refrigerated containers, etc.) are strong sources of heat. Take care in planning that such sources of heat are not operating in the range of a detector. If there is a car park outside the fence, make the operator aware of it. If this is unavoidable, several connected detectors should be used.

5.2.3 Climatic Conditions (Sun, Wind, Storms, Rain, Hail, Fog)

Depending on the climatic condition, the perimeter monitoring system is, in part, permanently exposed to extreme environmental conditions. Because of technology PIR detectors can sometimes perform badly. These natural factors are unavoidable, but with precise planning, they can be to a large extent compensated for, or even eliminated entirely.

The following points should be noted:

- PIR detectors are to be configured so that they are not exposed to heat radiation, especially that of the sun. Note that the sun can be very low at some seasons. ADPRO PRO detectors, thanks to a very complex signalling process and subsequent validation check, offer a modern compensation system. Nevertheless, if a detector directly faces the rising or setting sun, nuisance alarms can be triggered.
- Do not set up a single detector directly on a wire fence, as in a sunny environment this can cause significant movement in the warm air currents above the barrier.
- Check whether prolonged and intense fog is to be expected at the planned site. Because fog consists of tiny droplets of water in the micrometre range (20-40 µm), the radiation emitted by a body might only be received dampened by a PIR detector, since the infrared radiation is reflected and partially absorbed by the droplets of water. Experience has shown that the distance between individual detectors should be no greater than 45-50 metres. This makes safe operation with a good detection rate possible.

During a walk test in thick fog (see below picture) the alarm went off clearly at a distance of 80 m. The oscilloscope ‘snapshots’ below the picture show the corresponding detector signal values. Left, the value for 80 m; right, at a distance of a 100 m with the same detector installed, the alarm threshold was nearly but not quite reached.

- If the test subject had left a warm building and spent only a few moments in the cold, fresh air, the alarm would have sounded at a distance of up to 120 m.
  - Type of detector : 100H (without heating)
  - Date and time : 21 November 2011, 8 a.m.
  - Location : Xtralis, south side
  - Type of ground : grazed pasture
  - Height of mounting of detector : 4 m
  - Visibility : c. 120 m (thick fog)
  - Atmospheric pressure : 1021.3 mb
  - Humidity : 94% (light dew, just forming ice)
  - Air temperature : -1°C
  - Ground temperature : -7° C
  - Body temperature : -1° C. (The test subject wore a Gore-Tex (TM) jacket)
  - Head temperature : +19°C
- The moisture of rain, hail and snow can affect the detection rate. However, since the particles that form these are larger in diameter, sufficient radiation can penetrate between them. Typically, these environmental conditions do not last a very long time. In coastal areas, and near large lakes, this point of planning should be taken into special consideration.

- In agricultural environments such as harvested fields, or deserts, there can be strong winds, leading to drifts of pollen (from cereal crops), leaves (from forests) and sandstorms. This too must be adequately taken into account when planning. In particular, the barrier itself must be capable of withstanding these, and the mast for the PIR detector must be free of torsion and vibration as far as possible. Because of climate change, even more extreme weather is likely in continental Europe.

Walk Test in Winter

5.2.4 Geographical Position

The perimeter monitoring system is designed to project according to geographical location. Installations on level ground are not critical for planning, but if there are structures on uneven ground, care must be taken in case areas hidden by hills are not monitored; there may be gaps in the detection area.

Modern tools such as Google Earth and Google Maps can be helpful in analyzing orientation and environments.

5.2.5 Special Areas of Application (such as Hazardous Areas)

In sensitive areas, planning and execution of a perimeter monitoring system should take into account any applicable laws, rules and regulations.

We are happy to help you with planning your system on request.

5.3 Design and Choice of Detector

5.3.1 A coherent design raises the cost to the intruder and puts him at greater risk of discovery

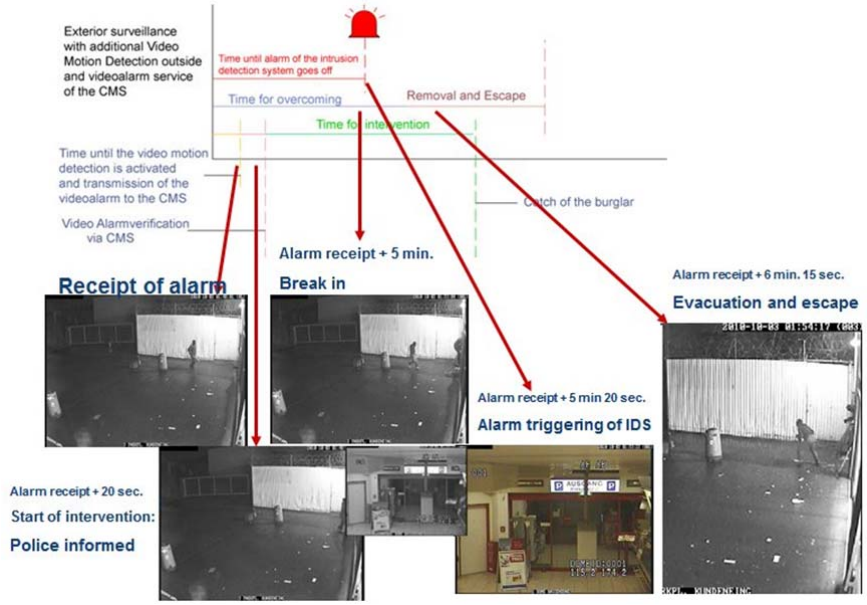
The better the perimeter security is adapted to particular circumstances, the more effort is required from a perpetrator. This is accompanied by the necessary criminal intent to commit the deed; add to that the cost in terms of tools, know-how and time of overcoming a security

system. The greater the expenditure, in terms of time and in other ways, the more likely it becomes, as a rule, that the perpetrator will be discovered.

5.3.2 Saving Time

Three periods of time are important as part of an effective perimeter security system:

- Time until the alarm
- Time needed to overcome perimeter security
- Time from the alarm to intervention, either on the protected object, or directly at the scene of the crime


Exterior surveillance with additional Video Motion Detection outside and videoalarm service of the CMS
Time until alarm of the intrusion detection system goes off
Time for overcoming
Removal and Escape
Time for intervention
Time until the video motion detection is activated and transmission of the videoalarm to the CMS
Video Alarmverification via CMS
Catch of the burglar
Alarm receipt + 5 min.
Receipt of alarm
Break in
Alarm receipt + 6 min. 15 sec.
Evacuation and escape
Alarm receipt + 5 min 20 sec.
Alarm triggering of IDS
Alarm receipt + 20 sec.
Start of intervention:
Police informed

Clearly, having an alarm at an outer boundary, rather than at the protected object itself, saves a lot of time. When a detector has as high a detection rate as possible, whilst at the same time avoiding false alarms, it enables the alarm to be swiftly verified, and confers an advantage in terms of time. The time between the alarm, and the alarm sounding or 'alert', becomes short. 'Intervention time' is the time it takes for assistance to reach the protected object from the alarm. The intervention time can vary according to place, time, or other circumstances. High levels of traffic, an increase in the frequency of extreme weather conditions, and so on, can lead to a significant increase in intervention time. This time must be taken into account when planning perimeter security. Precise local information about points of entry leads to more efficient and effective intervention.

5.3.3 Advantages of PRO PIR Detectors over other Technology

ADPRO PRO PIR detectors are a versatile solution for a variety of terrains and surfaces – whether asphalt, plaster, gravel, grass, flower beds or even roofs. PIR detectors also offer a very good price-performance ratio in relation to monitored areas.

- Volumetric ADPRO PRO PIR detectors cover large spaces.
- Long distance detectors, on the other hand, cover a narrow range, and can also detect objects at great distances.
- The most common uses for PIR detectors are in perimeter and exterior protection. However, the detectors can also be used for interior monitoring, for instance in large factories.
- The preparations that have to be made on the property itself are small in relation to the area to be protected, as in most cases foundations for fences already there can be used to put up masts.

- Operating and maintenance costs are comparatively low, because when a system is properly planned and operated it needs very little maintenance.
- Any seasonal adjustments or changes to use can easily be configured from a distance, if a detector is, for instance, connected to an ADPRO video gateway via a communications bus.
- The camera body, modelled on a plastic housing, accords with protection standard IP 54, and optionally IP65 or even IP66.
- The metal bracket to hold the detector, and all screws, are made of weather-resistant stainless steel.
- The PIR detector housing, and the plastic gas chamber (including terminal) that will shortly become available, with its tamper-proof, concealed cable guide (‘cable management’) are UV-stable and impact-resistant.

5.3.4 Different Principles for Detectors

Basically, detectors can be distinguished according to two main principles:

- Barrier or curtain detectors
- Surface or volumetric detectors

But to give a more precise solution for the requirements of different objects, there are finer gradations between:

- Curtain detectors with a larger aperture angle and medium nominal range
- Curtain detectors with a small aperture angle and large nominal range
- Volumetric detectors with a wide aperture angle and short nominal range
- Volumetric detectors with a very wide aperture angle and medium nominal range
- Volumetric detectors with a wide aperture angle large nominal range

Details of the nominal ranges, monitoring angles of aperture, and the monitoring ranges they give, are given in the detector specifications in Chapter 16.

5.3.5 Barrier or Curtain Detector

Planning Notes

Depending on local conditions such as the length of property boundaries, distances to obstacles (buildings, shrubs, containers, etc), the right choice of detector must take into account:

- Nominal range
- Number of zones (‘finger’)
- Monitoring angle of aperture

The following can be selected from the extensive range of ADPRO PRO PIR detectors:

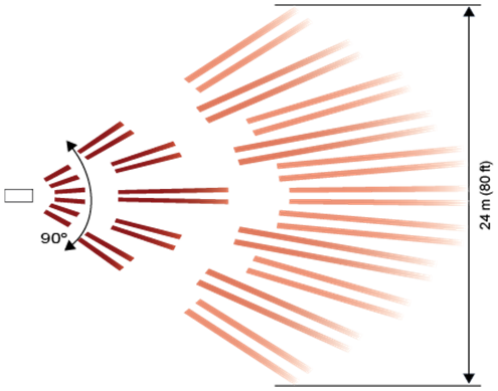
- PRO-45
- PRO-45I
- PRO-45H
- PRO-45HI
- PRO-45H-IP65
- PRO-45D
- PRO-45DH
- PRO-45 DH-IP65
- PRO-45Z
- PRO-51 *)

- PRO-85 *)
- PRO-85H *)
- PRO-85H-IP65 *)
- PRO-100
- PRO-100I
- PRO-100H
- PRO-100HI
- PRO-100HIS
- PRO-100H-IP65
- PRO-100IS-IP65
- PRO-250H

*) These ADPRO PIR detectors have volumetric properties and a narrow angle of aperture.

5.3.6 Surface or Volumetric Detector

Planning Notes



The key point in monitoring land surfaces rests on the specific nature of the objects; depending on that, planning should be for a so-called surface detector or a volumetric detector.

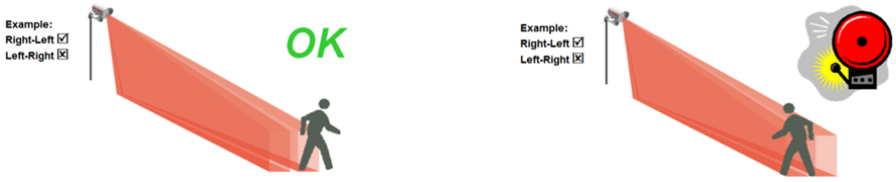
The following, from the extensive range of ADPRO PRO PIR detectors, correspond in terms of nominal range, number of zones (‘finger’) and monitoring angle of aperture:

- PRO-18
- PRO-18H
- PRO-18H-IP65
- PRO-18W
- PRO-18WI
- PRO-18WIS
- PRO-18WH
- PRO-18WHI
- PRO-18WH-IP65
- PRO-30
- PRO-40
- PRO-51 *)
- PRO-85 *)
- PRO-85H *)
- PRO-85H-IP65 *)

*) These ADPRO PIR volumetric detectors have curtain-like properties and a narrow angle of aperture.

5.3.7 Directional Detection

This feature enables monitoring of the detection area in particular directions, in order to reduce false alarms and to improve the performance of the detector. Movement from right to left and left to right can be detected in this way.



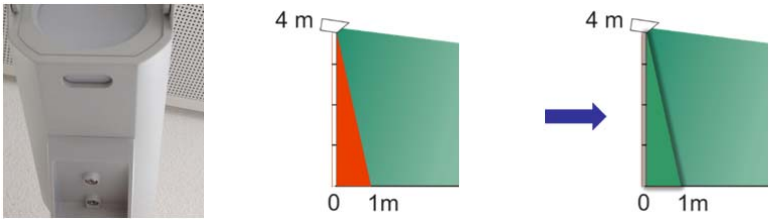
The following PIR detectors are available as part of the ADPRO PRO range:

- PRO-45D
- PRO-45DH
- PRO-45DH-IP65

5.3.8 Special Detectors

5.3.8.1 No Creep Zone

This feature of the PRO-45Z eliminates the creep zone of 1 m directly under the detector to zero.



This makes the detector a perfect fit for being mounted on poles especially in corners of the area to be protected. Fully protected single detector setup without the need for a second detector covering each other creep zones.This detector reduces the cost of installation, as there is no need for an additional pole surveillance.

5.3.8.2 IP65/ IP66 Rated Detectors

For very harsh environmental conditions as they may appear at sites located off-shore or even on-shore. Sometimes it is also necessary to have security devices cleaned on regular bases, due to the end users operation (sandy or dusty environment). Then often high pressure cleaning equipment is used.

To avoid water ingress and condensation inside the housing a special membrane is integrated into the housing. Condensation can happen e.g. when on a very hot sunny day suddenly a severe weather with hail and rain cools down the air very quickly.

NOTE!

Special care has to be taken to the cable glands. To avoid water ingress through the unused cable gland (the upper one in the image) it shall be ensured that the sealing blinding is correctly inserted.

The following **IP65-rated** PIR detectors are available as part of the ADPRO PRO range:

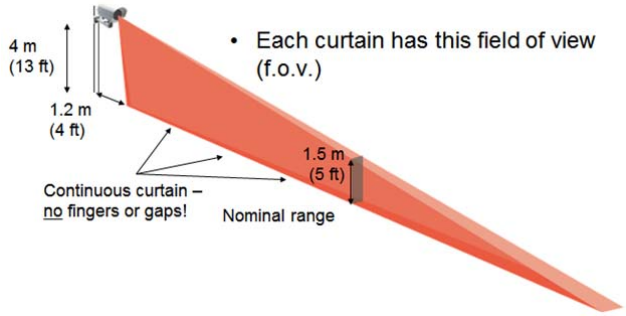
- PRO-18H/IP65
- PRO-18WH/IP65
- PRO-18WIS
- PRO-45H/IP65
- PRO-45DH/IP65
- PRO-85H/IP65
- PRO-100H-IP65
- PRO-100HIS

The following **IP66-rated** PIR detectors are available as part of the ADPRO PRO range:

- PRO-85H/IP66
- PRO-100H-IP66

5.4 Detector Placement (Typical Design Recommendation)

For Passive Infrared Perimeter Intrusion Detecion Systems (PIR-PIDS) it is recommended to terminate the detection area with a fence or any artificial barrier so as to avoid receiving readings caused by the detector's nominal range and overlength.



The figure shows the detector's over-length and how the detection area is terminated so as not to detect unnecessary movement; thus, reduce the false alarm rate.

The distance at which to terminate the detection area depends on the detector's model.

5.4.1 Simple Monitoring of an Enclosure with a Simple Boundary

5.4.1.1 Requirements

Monitoring of a higher fence surmounted by barbed wire.

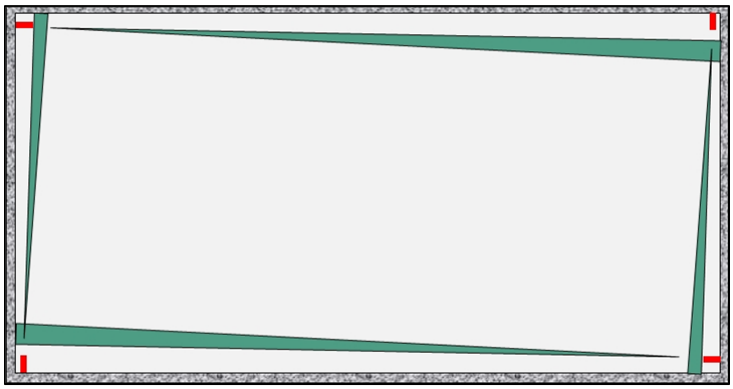
The inner area remains unmonitored. Each alarm from a detector leads to an alarm or a camera circuit.

5.4.1.2 Planning

Because of these circumstances a curtain detector should be used; depending on the size of the area the following detectors might be considered:

- PRO-40
- PRO-45, PRO-45H, PRO-45D, PRO-45DH
- PRO-51
- PRO-85, PRO-85H
- PRO-100, PRO-100H
- PRO-250H

In this case, a very narrow PRO-45 was chosen.



NOTE!

Creep zones are monitored by precedent detectors.

Over-length is avoided by using the existing fence.

5.4.2 Monitoring of an enclosure with particularly careful monitoring of the corners

5.4.2.1 Requirements

Monitoring of all four sides of a medium-high fence, with barbed wire around the top, on the inside. Particular attention is paid to the corner areas, because the bases of the poles can be easily mounted, and thus gives an incentive to climb over. The interior remains largely unmonitored. Each alarm from a detector leads to an alarm or a camera circuit.

5.4.2.2 Planning

Because of these circumstances a curtain detector should be used; depending on the size of the area the following detectors might be considered.

For monitoring the sides:

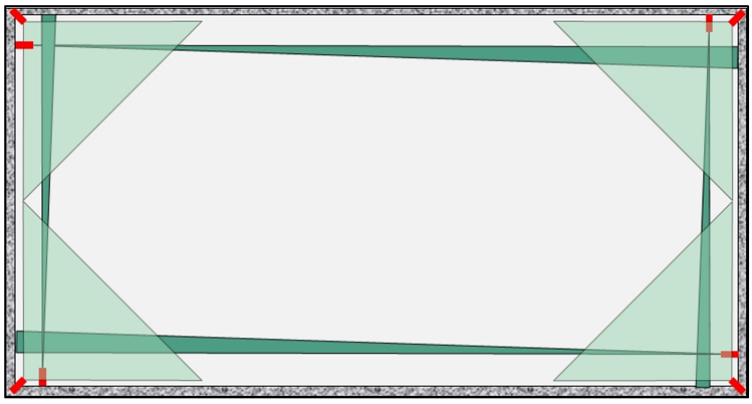
- PRO-40
- PRO-45, PRO-45H, PRO-45D, PRO-45DH
- PRO-51
- PRO-85, PRO-85H
- PRO-100, PRO-100H
- PRO-250H

In this case a very narrow PRO-45 was chosen.

For extra coverage in the sides, the following detectors are offered:

- PRO-18W, PRO-18WH

In this case a wide-angle PRO-18WH was chosen.



NOTE!

Creep zones are better monitored by the volumetric detectors in the corners.

Over-length is avoided by using additional fixed IR-blocking foils. These have to be maintained regularly so that loose swinging is not possible.

5.4.3 Continuous Monitoring of an Area

5.4.3.1 Requirements

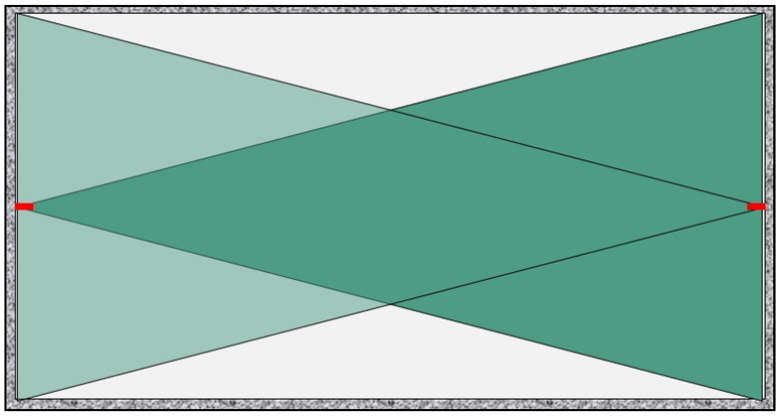
The monitoring of the area needs not be complete, but should be as full as possible. This corresponds to a continuous coverage strategy. A criminal must get to the middle of the area, regardless of which side he uses for his attempt to enter.

5.4.3.2 Planning

Because of these circumstances, ideally only volumetric detectors should be used. Depending on the size of the area the following detectors might be considered:

- PRO-18, PRO-18H
- PRO-30
- PRO-40
- PRO-51
- PRO-85, PRO-85H

In this case a standard volumetric PRO-30 was chosen.



NOTE!

This is a very suitable arrangement for programming an A/B alarm or cross zoning of two detectors. It may be possible to dispense with a range termination, because an alarm will be triggered only, if the two detectors within the perimeter boundary are activated.

5.4.4 Extensive Monitoring, or Monitoring of Borders, such as of a Country

5.4.4.1 Requirements

An absolutely seamless and very secure monitoring of an elongated, large area, or of a country's borders, for the use of the security services.

The highest possible detection rate will be assumed. The false alarm rate should be in a framework that can be mapped by an organisation (border monitoring: c. 10-12%).

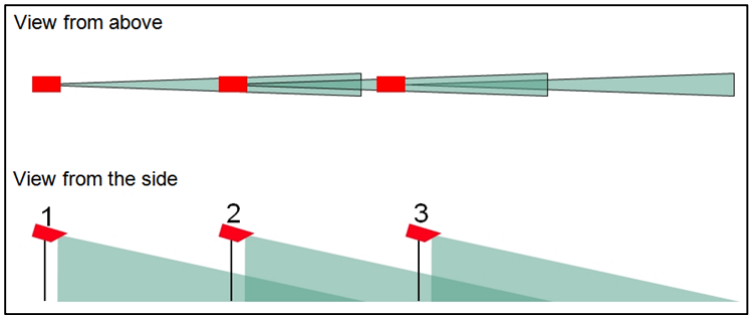
5.4.4.2 Planning

Because of these circumstances, normally a curtain detector with a very large nominal range should be used.

Depending on the application the following detectors might be considered:

- PRO-45, PRO-45H, PRO-45D, PRO-45DH
- PRO-100, PRO-100H
- PRO-250H

In this case a PRO-100H was chosen, on the one hand for a homogenous, seamless curtain, and on the other, because the division into zones (near, middle, far) enables precise detection of the location of a crime.



NOTE!

In regions with the climatic conditions of thick fog or snow is to be expected, it is very important that the distance between the detectors is at a maximum of 45-50 m.

If a video monitoring system with image analysis is used for verification purposes, objective lenses with fixed focal lengths are usually required. For a high quality of evaluation, it will be seen that this distance is also desirable.

If an attempt at intrusion is only likely from one side, choosing a type of detector with directional detection will lead to a reduction in false alarms.

5.4.5 Monitoring of a Building with Dedicated Camera Surveillance

5.4.5.1 Requirements

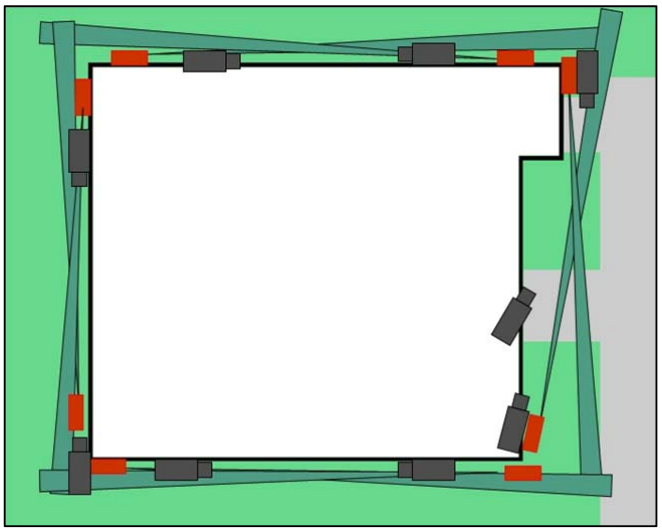
An absolutely seamless and very secure monitoring of the exterior front of a building. The highest possible detection rate will be assumed.

5.4.5.2 Planning

Because of the almost totally unfenced boundary of the property, only curtain detectors with a narrow angle of aperture can be used. Depending on the length of the building the following detectors are recommended:

- PRO-45, PRO-45H
- PRO-45D, PRO-45DH *)
- PRO-100, PRO-100H
- PRO-250H

In this case a PRO-45DH was chosen.



NOTE!

Because of the lack of range termination, it is important that a management system includes a link between the detectors and the right camera orientation mapping, so that the situation can be assessed quickly and efficiently.

*) For certain applications, it may be a case of dealing not with intruders, but with those who wish to break out from inside.

In this case detectors with directional detection (D-versions) can be used to avoid false alarms. This applies, for instance, to prisons, animal cages/ enclosures and parks.

5.5 False Alarms (according to DIN European Standard 0833-1)

False alarms can be classified as follows:

- **Technical alarm (Blind alarm):**

  The detector is defective, or has, for instance, been distorted by an electromagnetic field.

- **Malicious alarm:**

  An alarm is triggered deliberately without actual need, for instance, false tripping of a PIR detector by twisting.

- **False alarm:**

  A detector or alarm is ‘deceived’ by something that is similar to a real danger, such as alarms caused by large animals, vehicle exhaust fumes or environmental factors.

- **Transmission errors:**

  It sometimes happens that transmission or communication errors cause false alarms (a lack of competence with regard to the particular place, or false assumptions).

5.5.1 Causes of False Alarms

5.5.1.1 Insufficiently Stable Poles or Masts (Swinging)

When mounting ADPRO PRO detectors, always ensure that there is a solid surface, in the form of a stable and vibration-free wall. If the mounting is on a mast, it must be secure so that even in unfavourable weather (particularly wind), there is very little or no rocking at the upper end of the mast.

It is important to consider the wind load, especially if there are additional security features such as CCTV cameras, LED lights etc., on the mast.

ADPRO PRO PIR detectors are light in weight and have a wind-resistant housing design, and so offer little resistance to the wind.

5.5.1.2 Insufficiently Fixed Fences

In practice, one commonly occurring source of false alarms is barriers, that is, mechanical fences themselves. These are often rarely serviced after a few years.

Due to weather, fences, in particular chain-link fences, become loose and start to sway in the wind.

This generates noise signals, which are certainly compensated for by the ATD function, but over time the performance capability of the system may lessen.

Therefore, make absolutely sure that any overhanging branches or foliage are removed. Often plastic sheeting or bags are blown against the mesh, leading to noise signals.

5.5.1.3 Air Conditioners, Ventilation Shafts, Exhaust Pipes, Chimneys

As described in section 5.2.3, there is a range of environmental factors that can affect the performance capability of the system. By appropriate placement most of these can be avoided.

5.5.1.4 Walls and other Artificial Boundaries (Requirements)

Walls make ideal range boundaries. If there are no walls, stable, attached flagstones can be useful.

The use of screens and tarpaulins is discouraged.

5.5.1.5 Logical Connection of Several Detectors

If physical separation is not possible, for aesthetic or financial reasons, this must be considered in the planning and subsequent orientation of the detector.

First, attention must be paid to the areas where the monitored areas overlap considerably.

It can thus be sensible to connect to a burglar alarm system or safety management system.

It is simpler to use an appropriate detector.

See Section 14.1.2 IPT-Interactive Detectors.

5.5.2 No Alarm

In contrast to the false alarm, there can be no alarm, which impacts negatively on the quality of a perimeter security system. Quite apart from the effects of the weather, as described in section 5.2.3, errors in configuration and/or insufficient parameterisation can lead to a poor detection rate.

5.5.2.1 Low Sensitivity

One reason for this can be that the detector sensitivity has been reduced too much, for fear of too many false alarms, or because of the circumstances described in sections 5.2.1 and 5.2.2. In the event of, for instance, snow, rain or thick fog, even a perfectly calibrated system might not be triggered if the signal strength is no longer sufficient or the alarm threshold is too high. In this case the system must be adapted over time as a result of experience. One possible measure is described in section 5.5.2.2.

5.5.2.2 A/B Alarm (double knock)

One possible way to avoid false alarms is to use a so-called A/B alarm or ‘double knock’, that is, two detectors connected.

Only when two detectors go into alarm is there a major alarm.

If this option is chosen, very precise analysis and planning is required.

Even this measure can lead to false alarms if not installed perfectly; when, for instance, there is very thick fog between the two detectors.

6 Installation

6.1 Detector Installation

6.1.1 Safety Instructions for Installation

Personnel

Work on the electrical system must only be performed by qualified electricians.

Improper Installation and Start-up

Warning!

Risk of injury through improper installation and start-up!

Improper installation and start-up can lead to serious personal injury or property damage.

Therefore:

- Be careful with open, sharp-edged components.
- Before installation, ensure that the device has not been damaged in transport.
- Before installation, ensure that all transport packaging and/or transport safety devices have been removed from the device.

Working from Height

DANGER!

Danger of falling down! There is acute danger, when working with unsecured ladders. Unsecured ladders can slip and cause a fall that can lead to serious injuries.

Therefore:

- Before starting work, secure the ladder against slipping and ensure at any time a save rest.
- A secure access path to all man-carrying platforms and working places must be ensured.
- All places on which work is performed, as well as the access paths to there, have to be illuminated in a sufficient way.
- Additional information: refer to local “Safety at Work Act”.

6.1.2 Wiring

When preparing for wiring the detectors, it is critical to follow the local wiring regulations and apply their standards for the spacing between the various existing cables. Having the detectors wired close to high-voltage connections affects the signals and may lead to false alarms, inaccurate readings, etc

6.1.3 Mounting

Preparation

The mounting surface must be stable to avoid false alarms from vibrations.

NOTE!

For further assistance, labels have been placed under the detector's housing cover. They explain the DIP switch settings and wiring labels. They must be read before mounting the detector.

To mount the detector, follow these steps:

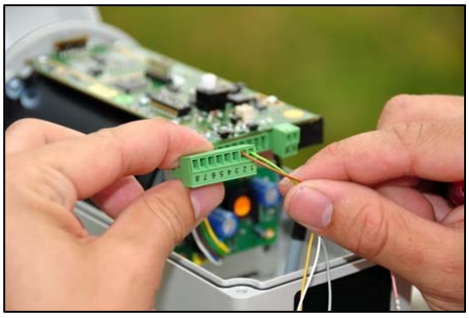
1. Screw the bracket tightly to a wall or pole with at least two screws,

For the model PRO-250H: Screw the detector to a pole with the provided pole bracket, ZA P L1 (available as accessory for all other models, see chapter 12).

2. Mount the detector 2.5 m to 4 m (8 ft to 13 ft) above the ground,

3. Open the cover by unscrewing the 2 cover screws,
4. Pass the cable through the cable gland into the detector's housing,
5. Strip the cable and the wires,

6. Connect the power supply according to the wiring plan on the sticker inside the cover (see also the wiring plan in chapter 14),
7. Tighten the cable gland.



The detector is now ready for alignment.

6.1.4 Alignment

The detection range of a PIR detector is not limited but a function of size, speed and temperature contrast of a target against its background. The detector should be aligned so that a natural or artificial background at the end of the range terminates the field of view. Where the detection range has to be limited, a terminating screen can be used to avoid detection of targets beyond the wanted range.

Vertical alignment is optimal when the upper edge of the field of view is at 1.5 to 2.5 m above ground at the end of the required detection range provided that the field of view is properly terminated. Coarse alignment can be done visually by looking along the grove on top of the detector.

Accurate fine alignment is easily achieved with the help of the Alignment Telescope AD 851, which can be placed on top of the detector for this purpose.

Preparation

NOTE!

For an optimal function of the detector:

- Limit the detection range to a natural or artificial background (e.g. a wall).
- Do not align the detector to a mesh wire fence.
- Ensure that no moving objects (e.g. branches, bushes, fences) or body of water are within the detection zone.

6.1.4.1 Coarse Alignment

To align the detector, follow these steps:

1. Look along the groove on the detector's cover,

2. Locate a person or fixed-point at the nominal detection range and approximately 1.50 m (5 ft) height,

NOTE!

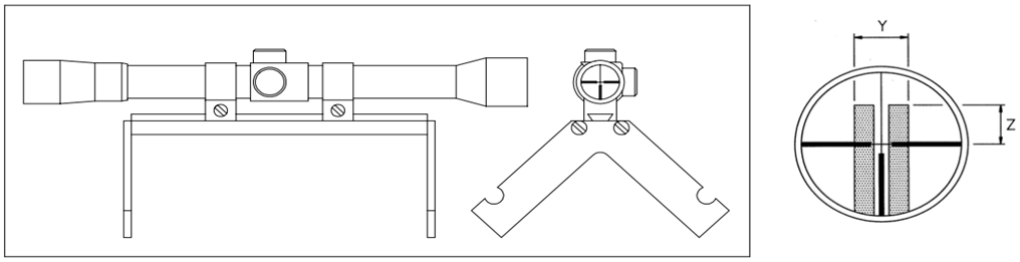
The nominal detection range varies depending on the detector model.

For the nominal range of the detector models see technical data in chapter 16.

3. Retighten the screw.

6.1.4.2 Accurate Fine Alignment

The AD 851 fits all detector models and should be used for fine alignment.



6.1.4.3 Finalization of Installation

Retighten the screw carefully.

NOTE!

Be careful that the position of the detector is not panned or tilt during this process.

6.1.4.4 Ready for Walk Test

The detector is now ready for commissioning.This can be done either using the hardware mode or software mode as it will be explained in the following sections.

7 Operating Modes

7.1 Selectable Operating Modes

The detector can work in two operating modes:

- Hardware mode
- Software mode

The devices of all models are provided with the following features.

7.1.1 Modes

7.1.1.1 Hardware Mode

In hardware mode the detector can be configured and operated by means of DIP switches located on the connector board of the detector.

By default, the detector operates in hardware mode and the DIP switches are pre-set as follows:

Default Settings of DIP Switches	DIP Switch	Status		Function
	1	ON		Sensitivity adjustment
	2		OFF	
	3	ON		ATD
(Volumetric Models only)	4	ON		Pulse count
(PRO-45D(H) only)	4		OFF	Directional detection
	5		OFF	Test
	6	ON		Anti-tamper
(PRO-51, PRO-85(H), PRO-100(H), PRO-250H only)	7	ON		Mounting height
	8		OFF	No function

NOTE!

More setting options are available in software mode.

7.1.1.2 Software Mode

In software mode, the detector can be configured and operated using the ADPRO® Windows® PRO software.

Adjustable Functions only in Software Mode

The following adjustments are only available in software mode:

The following adjustments are only available in software mode:

- Individual sensitivity adjustment (20% - 140% or 50%-150%, see individual detector specification)
- Individual pulse count for volume models (0-10 pulses)
- Bi-directional detection for the PRO-45D(H) models
- Individual anti-tamper alarm output (transistor and/or relay)
- Activation/deactivation of left/ right channels for PRO-45D(H) models

- Activation/deactivation of small/medium/large channels for long-range curtain models PRO-100, PRO-100H and PRO-250H
- Activation/deactivation of left/middle/right channels for multi-zone volumetric models PRO-85 and PRO-85H.

8 Commissioning

8.1 Walk Test

According to European Standard 50131-2-2, 'Walk Test' is defined as follows:

The walk test is an operating test in which the detector is stimulated by a standard walk test object in a monitored area.

A standard walk test subject is a person of normal height and weight who is plausibly dressed as an intruder.

This test is used to install a detector for normal operation, in the best way for the desired monitoring area, in order to achieve on the one hand the highest possible detection rate (DR), and on the other the lowest possible false alarm rate (FAR).

The walk test can be performed when installing both hardware and software.

Using the alarm outputs, the test can be performed without auxiliary devices. For a more accurate and reliable calibration, the use of an optional CT-PRO wireless walk tester, or connection to a PC via the serial RS-485 interface, is recommended.

8.1.1 Walk Test – Hardware Mode

To perform the walk test in hardware mode, follow these steps:

1. Keep the default settings of DIP switches 1 and 2,
2. Set DIP switch 3 to "OFF" to deactivate the adaptive threshold discrimination (ATD) function. See section 9.2 for further details,
3. Close the cover,

DIP Switch Settings for Adjustments

DIP Switch	Status		Function
1	ON		100% sensitivity hardware mode
2		OFF	
3		OFF	ATD Function

4. Perform the walk test.

   It is recommended that, initially, a preview with a detector pre-adjusted with a telescopic sight is carried out, according to the corresponding area to be monitored (see the overview of installed detectors in chapter 20).

   Start with the maximum distance.

   Proceed at a 90° angle to the longitudinal axis of the area to be monitored.

   If there is no alarm in the area you are testing, re-adjust the angle of vision.

   If the alarm trigger is correct, next check the lateral areas.

   To avoid false alarms, make sure that there is no over-reaching.

   Finally, cross the area several times at different distances and in different directions.

After the test

After the walk test, do the following:

1. Set DIP switch 3 (ATD function) to "ON",
2. Fix the aligned detector horizontally with a nut underneath,
3. Fix the aligned detector vertically with a nut on the right side.

Optimising Detection

NOTE!

Repeat the walk test several times under various light intensities (e.g. daylight, dawn) and weather conditions (e.g. wind, rain, snow, hail) to optimise the detection on a basis of various data.

Furthermore, the performance of the detectors can be improved when the subject, in addition to walking upright with his arms at his sides, tries different postures, such as crawling on the floor on his hands and knees.

8.1.2 Walk Test – Hardware Operation with CT-PRO Wireless Walk Tester

The cordless walk tester, CT PRO 2, is an accessory for checking the detector alignment remotely. During a walk test it indicates a detector alarm with a beeper and an LED. The walk tester CT PRO 2 consists of a transmitter (CT PRO 2-T) and a receiver (CT PRO 2-R).

8.1.3 Receiver

LED Description

- **Power:** LED indicates power is on and battery OK, dims when voltage is low.
- **Connectivity:** LED indicates communication with transmitter is OK.
- **Signal:** LED bar indicates the received signal strength of a test person during walktest

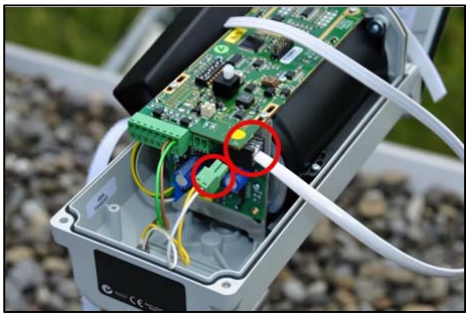
8.1.4 Transmitter

1. Do not change the factory settings of DIP switches 1 and 2,

Factory Settings of DIP Switches 1 and 2

DIP-Switch	Status		Function
1	ON		100% sensitivity hardware
2		OFF	
3		OFF	ATD-Function

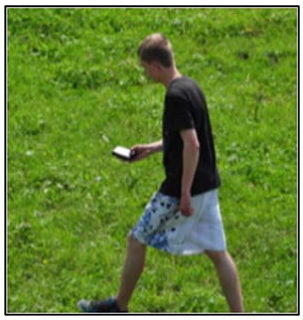
2. Disconnect the RS-485 plug (left circle),
3. Connect the CT-PRO transmitter with the RJ12 connector (right circle),



4. Close the cover,
5. Fix the CT-PRO transmitter to the bottom of the detector with the provided cable strap,

6. Click ‘ON’ on the CT-PRO receiver. ( ),
   The green LED lights up. The yellow LED flashes.
7. Click ‘buzzer’. ( ),
   The green LED flashes.
   The red LEDs (1) show the signal strength.

8. You can now perform the walk test as described in section 8.1.1. Cross the area several times at different distances and in different directions.
   A high level on the LED bar indicates strong sensor signals.
   A low level on the LED bar indicates weak sensor signals.
   The buzzer indicates an alarm within the zone being monitored.



If the desired detection range is not attained:

1. Slightly realign the detector upwards,
2. Repeat the walk test.

If the sensitivity is too high:

1. Reduce the sensitivity to 75% (18,30,40,45 only) or the range (PRO-51, PRO-85, PRO-100, PRO-150) by setting DIP switch 1 to “OFF” and DIP switch 2 to “ON”,
2. Repeat the walk test.

If the sensitivity is still too high:

1. Reduce the sensitivity to 40% (18,30,40,45 only) or the range even further (PRO-51, PRO-85, PRO-100, PRO-150) by by setting DIP switch 2 to “OFF”,
2. Repeat the walk test,

   For the overall sensitivity settings of the detector set by DIP switches 1 and 2, see the following table.

   The following settings for detector sensitivity are possible with the use of DIP switches 1 and 2.

DIP-switch	Status		Function
1	ON		Adjustable sensitivity available only in software mode; depending on detector model
2	ON		
1	ON		100% HW sensitivity (PRO-18, PRO-30, PRO-40, PRO-45) Full HW range (PRO-51, PRO-85, PRO-100, PRO-250)
2		OFF	
1		OFF	75% HW sensitivity (PRO-18, PRO-30, PRO-40, PRO-45) Medium HW range (PRO-51, PRO-85, PRO-100, PRO-250)
2	ON		
1		OFF	40% HW sensitivity (18/30/40/45) Low HW range
2		OFF	

			(51/85/100/250)

Fixation

If the desired performance is reached:

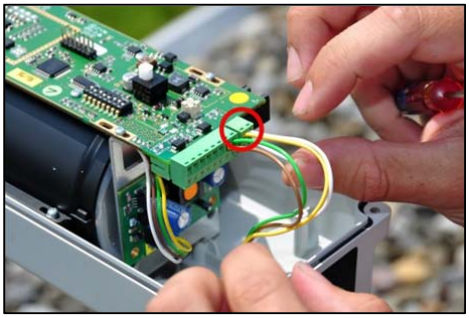
1. Fix the aligned detector horizontally with a nut underneath.
2. Fix the aligned detector vertically with a nut on the right side.

NOTES!

Be careful NOT to change the aligned position of the detector.

After the test

1. Remove the cable strap,
2. Open the cover,
3. Unplug the CT-PRO transmitter,
4. Reconnect the RS-485 plug:



5. Close the housing tightly with both screws.

The alignment is concluded.

8.1.5 Walk Test – Software Operation

Performing walk test using ADPRO Windows® software:

1. Install the software (for installation instructions, see chapter 10),
2. Open the cover of the detector,
3. Connect the detector to a PC via an RS-485 connection, either through the RJ12 test socket or the A/B lines (see diagram in chapter 13.2),
4. Set DIP switch 1 and DIP switch 2 to “ON”:

DIP Switch Settings for Software Mode

DIP-Switch	Status		Function
1	ON		Software mode
2	ON		

Display the Signal Strength

5. With the PRO software (see chapter 10), you can change the settings (instead of using DIP switches) and check the detector's signal and alarm performance by doing a walk test (instead using of the CT PRO).

9 Functions

9.1 Sensitivity Settings

9.1.1 Sensitivity Settings – Hardware Operation (PRO-18(H), 18W(H), 30, 40, 45(H), 45D(H) only)

Detectors cover different detection ranges. The optimal sensitivity for the nominal range and the width of the nominal range is preset to the default settings. The sensitivity is determined by the DIP switches 1 and 2 on the board.

The following sensitivity settings are available:

Standard Setting of DIP Switches 1 and 2

DIP-Switch	Status		Function
1	ON		100% sensitivity at nominal range
2		OFF	

Medium Sensitivity/ Medium Range of Coverage

DIP-Switch	Status		Function
1		OFF	75% sensitivity in hardware mode
2	ON		

Low Sensitivity/ Short Range of Coverage

DIP-Switch	Status		Function
1		OFF	40% sensitivity in hardware mode
2		OFF	

NOTE!

Sensitivity settings in hardware mode are limited to preset values.

9.1.2 Sensitivity Settings – Software Operation

In software operation the sensitivity of a detector can be set individually within a preset range:

- For detectors with long range (PRO-51, PRO-85, PRO-85H, PRO-100, PRO-100H and PRO-250H): 50%-150%.
- For all other models: 20%-140%.

Preparations

To change the sensitivity settings with software, follow these steps:

1. Install the PRO software (see chapter 10),
2. Connect the detector to a PC using the IFM-485-ST interface (see chapter 7),
3. Turn the DIP switches 1 and 2 to “ON”.

DIP Switch Settings for Hardware Operation

DIP-Switch	Status		Function
1	ON		Adjustable sensitivity available only in software mode; depending on detector model
2	ON		

4. Set the sensitivity in the software settings,
5. Disconnect the detector from the power supply.

The individual sensitivity setting is saved.

NOTE!

Do NOT change the settings of DIP switches 1 and 2, because the individual sensitivity settings are set by the hardware installation override.

NOTE!

If the required detection range coincides with the denominator replaced by the range, no adjustment of the detection distance is necessary.

If the required coverage area is smaller than the nominal range, there may be frequent false alarms.

Nominal Ranges

Information on the nominal ranges of models of detectors are in the technical data in chapter 16.

9.2 Adaptive Threshold Discrimination (ATD)

Any thermal radiation will be converted by the pyro element into an electrical signal; as will smaller signals, such as those produced by animals. These small signals are called ‘noise signals’.

When the ATD function is left off, this leads after a certain time to a summation of the signals and thus to a low signal-noise ratio. This can lead to false alarms. This system would be too sensitive.

If the ATD function is on, these signals would be evaluated by complex algorithms, and the Alarm Threshold Level would be automatically raised by an adequate amount. To make the system not completely insensitive, this is only possible to a factory preset maximal value. With this function false alarms can be avoided and an optimal detection rate achieved.

NOTE!

1. To minimize the occurrence of alarms the ATD function should always be activated in normal operation.
2. As already described before, this function must be turned off during the walk test, otherwise, because the test subject will frequently set off the alarm, it will be raised from the start and the system itself, set to the highest possible sensitivity settings, will only be tripped wrongly.
3. For the last walk test the ATD function must be turned on.

The ATD function is activated by default.

Standard DIP Switch Settings

DIP-Switch	Status		Function
3	ON		ATD

Deactivation

→ Turn DIP switch 3 to “OFF”.

DIP Switch Setting

DIP-Switch	Status	Function

3		OFF	ATD

9.3 Vandalism Protection

The vandalism protection function offers increased protection against vandalism. As soon as the previously stored alignment of the detector is changed a continuous alarm is triggered.

By default, the vandalism protection function is activated on the transistor output (open collector).

Standard DIP Switch Setting

DIP-Switch	Status		Function
6	ON		Vandalism Protection

Deactivation

To deactivate the vandalism protection function, carry out the following step:

→ Turn DIP switch 6 to “OFF”.

DIP

DIP-Switch	Status		Function
6		OFF	Vandalism Protection

Software Operation

To activate the vandalism protection funcion in software operation, carry out the following steps:

1. Open the ‘Setting’ dialogue of the PRO software,
2. Set the option for vandalism protection to “ON”.

There are more options in chapter 10 (Software Installation).

Resetting the position after an unauthorised intrusion

These are the ways to stop the alarm:

1. Remount the detector in its original position.
2. Reset the position of the detector.

Resetting the Position – Hardware Operation

To reset the position of the detector within c. 60 seconds -the vandalism protection sensor remains active, follow these steps:

1. Leave the housing of the detector closed,
2. Disconnect the detector from the power supply,
3. Connect the detector to the power supply,
4. Align the detector again.

The new position of the detector will be automatically saved after c. 60 seconds.

To reset the position of the detector within c. 5 minutes, follow these steps:

1. Leave the detector connected to the power supply,
2. Open the detector housing to deactivate the vandalism protection sensor,
3. Close the detector housing to activate the vandalism protection sensor,
4. Align the detector again.

The new position of the detector will be automatically saved after c. 5 minutes.

To reset the detector within 5 minutes, follow these steps:

1. Disconnect the detector from the power supply,
2. Connect the detector to the power supply again.

The new position of the detector will be saved immediately.

Resetting the Position - Software Operation

To reset the position of the detector in software operation, follow these steps:

1. Open the 'Setting' dialogue in the PRO software,
2. Set the option 'Reset anti-tamper position' to "ON".

More details are given in chapter 7.

Resetting during Normal Operation

To reset the position of the detector during normal operation, follow these steps:

1. Disconnect the detector from the power supply,
2. Connect the detector to the power supply again.

The new position of the detector will be automatically saved after c. 60 seconds.

Resetting during Normal Operation in Software Operation

See chapter 7.

9.4 Intelligent Digital Signal Processing

The detector is automatically set with this function. Background noise and repeated movements can be analyzed and balanced to minimize false alarms.

The threshold level is exceeded when background noises or repetitive movements increase within c. 1-2 minutes of the end of the event.

Several preset parameters are analyzed. When there is a signal corresponding to one of the preset parameters an alarm is triggered.

9.5 Internal Temperature Compensation

The detector is automatically set with this function. This compensates a variation in signal strength due to different light levels and weather conditions.

9.6 Pulse Count

(Volumetric Models Only)

To reduce the false alarm rate, the pulse counter delays the activation of the alarm for a preset number of pulses after the alarm criteria have been reached.

By default, three pulses are added to the first start pulse.

The alarm will be activated after 4 pulses.

Standard DIP Switch Settings

DIP-Switch	Status		Function
4	ON		Pulse Counter

Deactivation

To deactivate the pulse counter function, follow this step:

→ Turn DIP switch 4 to “OFF“.

An alarm is activated after one pulse count.

DIP Switch Setting

DIP-Switch	Status		Function
4		OFF	Pulse counter

9.7 Directional Detection

(Models PRO-45D, PRO-45DH only)

This function enables monitoring of a detection area in particular directions to reduce false alarms and improve the performance of the detector. Movement from left to right and right to left can be recognized. Moreover, in software operation bi-directional detection can be set.

NOTE!

DIP switch 4 is only used in models (PRO-45D and PRO-45DH) for directional detection.

For volume models (PRO-18, PRO-18H, PRO-30, PRO-40, PRO-51, PRO-85, PRO-85H) DIP switch 4 is used for the impulse counter.

On other models DIP switch 4 has no function.

DIP Switch settings

DIP-Switch	Status		Function
4		OFF	from left to right
4	ON		from right to left

To change directional detection:

→ Set DIP switch 4 to “ON“.

Bi-Directional Detection

To activate the bi-directional detection, follow these steps:

1. Set DIP switches 1 and 2 to “ON” to change to software mode,
2. Open the “Setting” menu,
3. Choose “Bi-directional” from the drop-down menu “SW Directional detection”.

9.8 Mounting Height Adjustment

PRO-51, PRO-85, PRO-85H, PRO-100, PRO-100H, PRO-250H only

The mounting height feature allows the adjustment of the detector´s sensitivity in relation to the mounting height. This feature is available for long-range detectors only.

DIP Switch Position

DIP Switch	Status		Function
7		ON	Higher > 3 m (10 ft.)
7	OFF		Lower < 3 m (10 ft.)

If the detector is mounted lower than 3 m (10 ft.):

→ Set DIP switch 7 to “OFF“.

9.9 Internal Heating Device

High Performance Detectors (H-models) only

A controlled heating device, connected to the electronic board and powered by the power supply of the detector, prevents condensation forming on the optical surfaces and ensures optimal internal temperature.

10 Software Installation

The ADPRO PRO Windows® Software is available as an accessory to the interface module “IFM-485-ST (formerly IF-485B)”. It is used for commissioning of challenging installations, optimizing the settings and monitoring the detector/s in use. It can be used for all types of detectors.

The Software shows all current operation parameters and analog signals of each detector in real time. This is useful in various situations, such as realignment of the detector, adapting certain parameters or blanking out objects in the detection area causing unwanted alarms.

NOTE!

The software’s name has been changed from “IF-485B” to “IFM-485-ST”; it has the same functionality, but with the following enhancements:

- Destruction of the unit due to over-voltage is avoidable.
- Accidental reverse of polarity will not cause damage to the unit.

10.1 System Requirements

Before installing the ADPRO PRO Windows® Software, make sure that the following requirements are available in the computer:

- Microsoft® Windows® PC
- Communication Ports: USB or RS232

10.2 Install Software

The ADPRO PRO Windows® Software installation wizard allows you to easily install the Software by providing you with direct and easy-to-follow steps whether installation is made on an XP or Windows 7 platform.

This section discusses how to install the Software on Windows 7 and XP platforms, in addition to configuring the communication port.

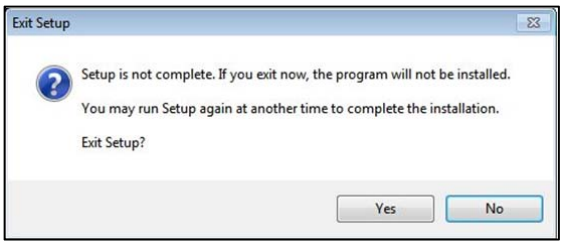
10.2.1 Install on Windows 7 Platform

To install the Software on a Windows 7 platform, do the following:

1. Unzip the file “Setup_PROXX.zip”,
2. Rename the file “Setup_PROXX.txt” to “Setup PROXX.exe”,
3. Double click the file “Setup PROXX.exe”, a Security Warning window appears,
4. Click (Run), a User Account Control window appears,
5. Click (Yes), the ADPRO Setup Wizard installation wizard starts and the following window appears:

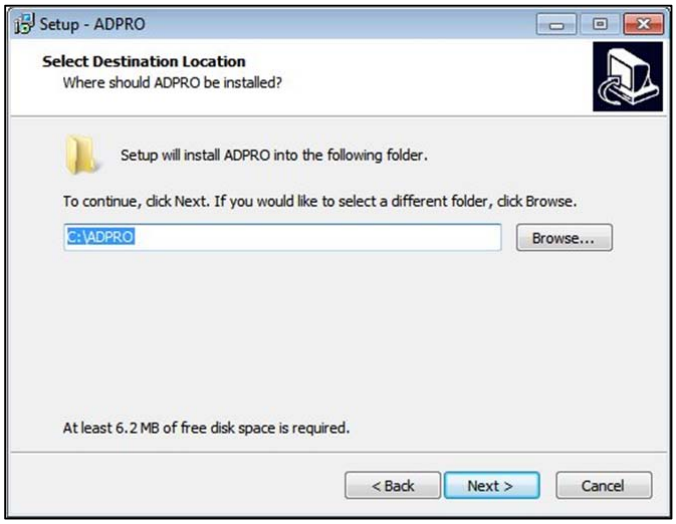
Setup - ADPRO
Welcome to the ADPRO Setup Wizard
This will install ADPRO Version 0601 on your computer.
It is recommended that you close all other applications before continuing.
Click Next to continue, or Cancel to exit Setup.
Next >
Cancel

If you want to cancel the installation process, click (Cancel), the following message appears:


Exit Setup
Setup is not complete. If you exit now, the program will not be installed.
You may run Setup again at another time to complete the installation.
Exit Setup?
Yes
No

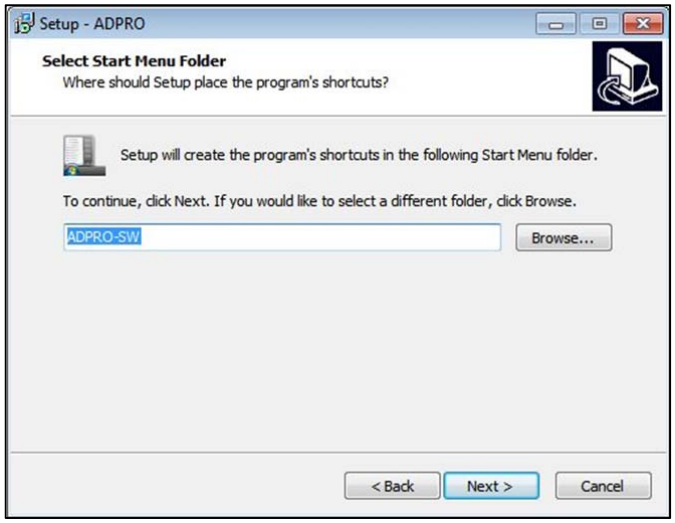
Click (Yes) to cancel the installation process, or (No) to resume it. You can reinstall the Software later.

6. Click (Next), the following window appears:


Setup - ADPRO
Select Destination Location
Where should ADPRO be installed?
Setup will install ADPRO into the following folder.
To continue, click Next. If you would like to select a different folder, click Browse.
C:\ADPRO
Browse...
At least 6.2 MB of free disk space is required.
< Back
Next >
Cancel

You can save the ADPRO PRO Windows® Software in the selected folder or specify another one by clicking (Browse) then selecting it.

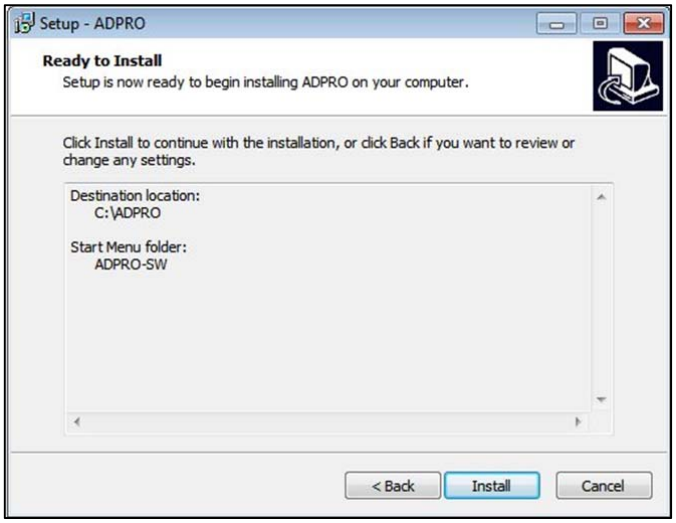
7. Click (Next), the following window appears:


Setup - ADPRO
Select Start Menu Folder
Where should Setup place the program's shortcuts?
Setup will create the program's shortcuts in the following Start Menu folder.
To continue, click Next. If you would like to select a different folder, click Browse.
ADPRO-SW
Browse...
< Back
Next >
Cancel

The window shows where the Software's shortcuts will be created, if you want to specify another folder, click (Browse) and select it.

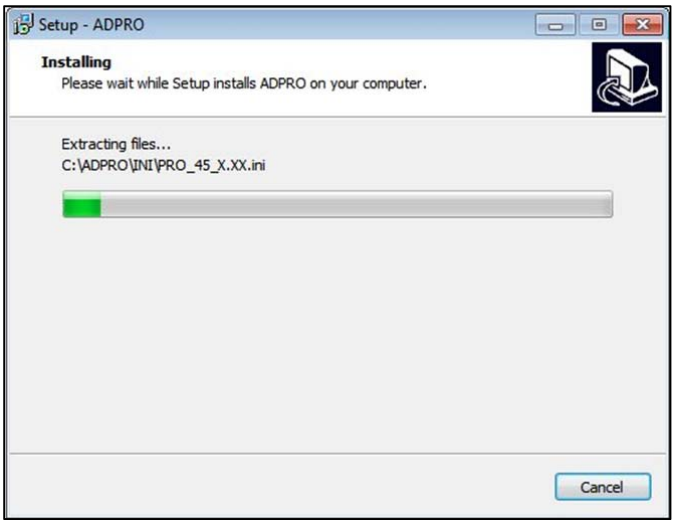
You can return to the previous window to make the changes you want by clicking (Back). This button is available in all windows.

8. Click (Next), the following window appears:


Setup - ADPRO
Ready to Install
Setup is now ready to begin installing ADPRO on your computer.
Click Install to continue with the installation, or click Back if you want to review or change any settings.
Destination location:
C:\ADPRO
Start Menu folder:
ADPRO-SW
< Back
Install
Cancel

The window shows the destination location and start menu folder you specified.

9. Click (Install), the following window appears:



10. Wait till the installation is complete, the following window appears:

Setup - ADPRO
Completing the ADPRO Setup Wizard
Setup has finished installing ADPRO on your computer. The application may be launched by selecting the installed icons.
Click Finish to exit Setup.
Finish

11. Click (Finish).

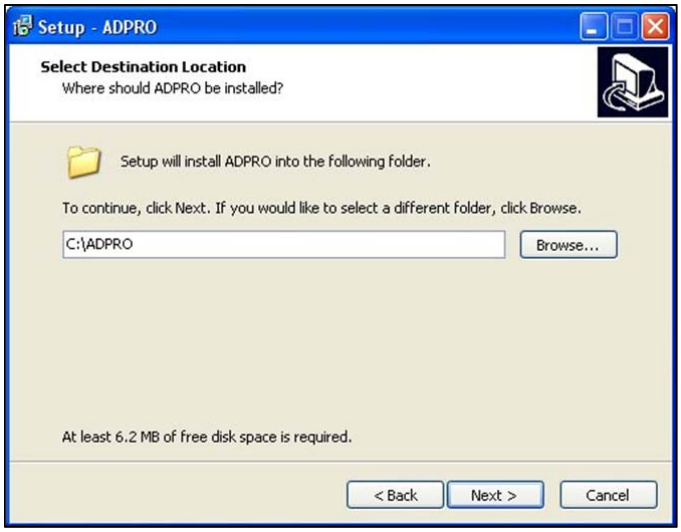
10.2.2 Install on XP Platform

To install the Software on an XP platform, follow these steps:

1. Unzip the file “Setup_PROXX.zip”,
2. Rename the file “Setup_PROXX.txt” to “Setup PROXX.exe”,
3. Double click the file “Setup PROXX.exe”, the ADPRO Setup Wizard starts and the following window appears:

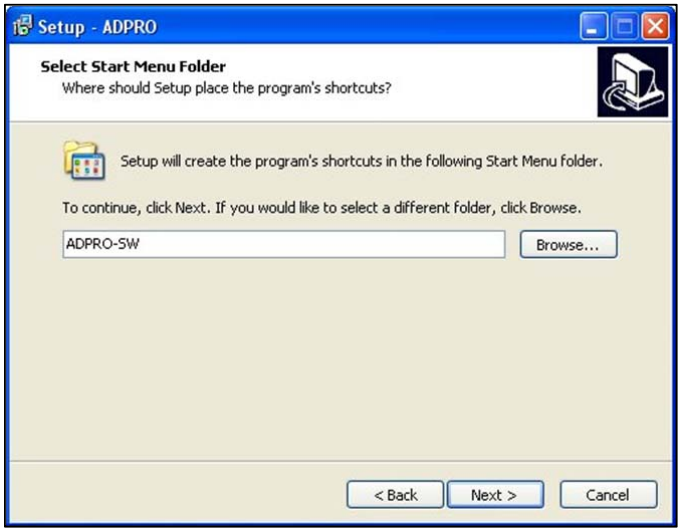
Setup - ADPRO
Welcome to the ADPRO Setup Wizard
This will install ADPRO Version 0601 on your computer.
It is recommended that you close all other applications before continuing.
Click Next to continue, or Cancel to exit Setup.
Next >
Cancel

4. Click (Next), the following window appears:


Setup - ADPRO
Select Destination Location
Where should ADPRO be installed?
Setup will install ADPRO into the following folder.
To continue, click Next. If you would like to select a different folder, click Browse.
C:\ADPRO
Browse...
At least 6.2 MB of free disk space is required.
< Back
Next >
Cancel

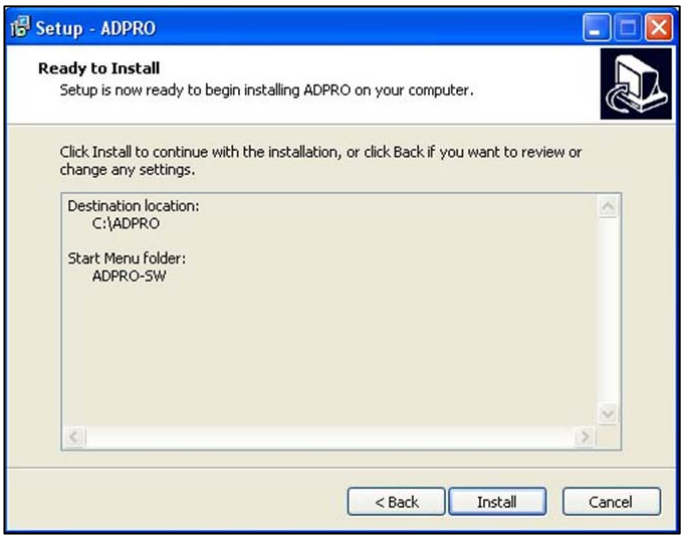
You can save the ADPRO PRO Windows® Software in the selected folder or specify another one by clicking (Browse) then selecting it.

5. Click (Next), the following window appears:


Setup - ADPRO
Select Start Menu Folder
Where should Setup place the program's shortcuts?
Setup will create the program's shortcuts in the following Start Menu folder.
To continue, click Next. If you would like to select a different folder, click Browse.
ADPRO-SW
Browse...
< Back
Next >
Cancel

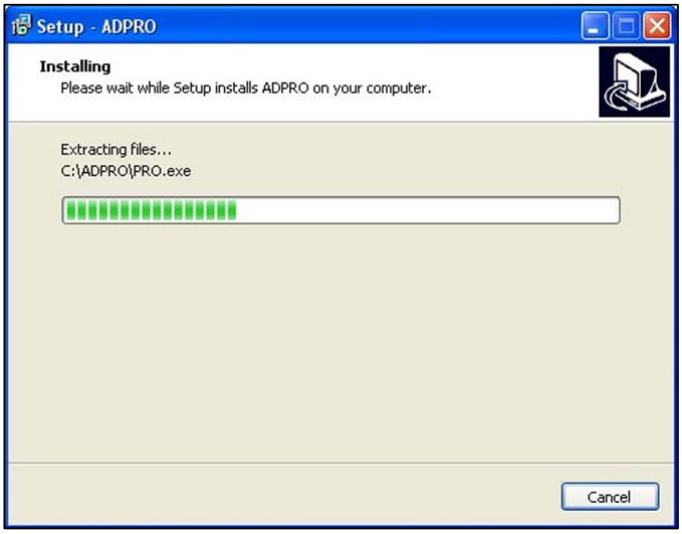
The window shows where the Software's shortcuts will be created, if you want to specify another folder, click (Browse) and select it.

6. Click (Next), the following window appears:


Setup - ADPRO
Ready to Install
Setup is now ready to begin installing ADPRO on your computer.
Click Install to continue with the installation, or click Back if you want to review or change any settings.
Destination location:
C:\ADPRO
Start Menu folder:
ADPRO-SW
< Back
Install
Cancel

The window shows the destination location and start menu folder you specified.

7. Click (Install), the following window appears:

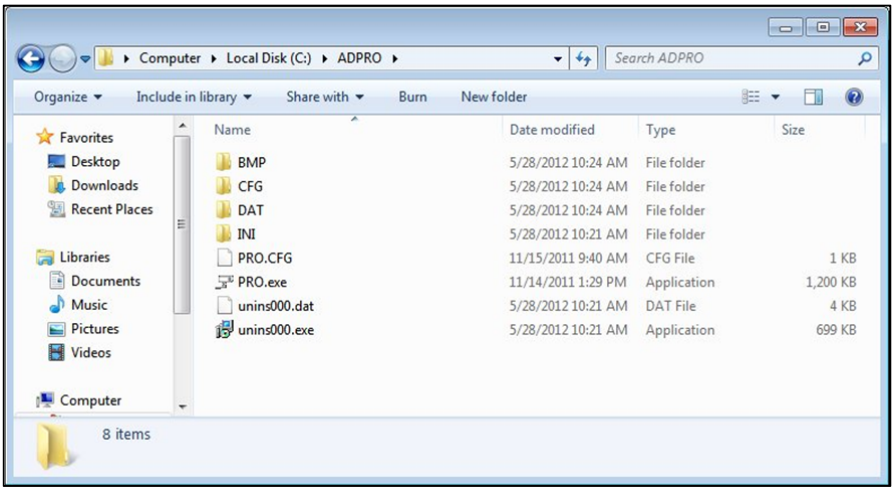


8. Wait till the installation is complete, the following window appears:

Setup - ADPRO
Completing the ADPRO Setup Wizard
Setup has finished installing ADPRO on your computer. The application may be launched by selecting the installed icons.
Click Finish to exit Setup.
Finish

9. Click (Finish).

The ADPRO PRO Windows® Software is now installed in your computer in the specified directory and the following structure is created:



Each sub-folder is responsible for a specification action as follows:

BMP : Contains all images taken using the Software.

CFG : Contains all detector configuration files.

DAT : Contains all statistics and debugger files.

INI : Contains all detectors definition files. Each detector model requires its specific INI file.

PRO.CFG : Contains specific data relevant to the display structure such as logo on images, etc. This file must not be deleted.

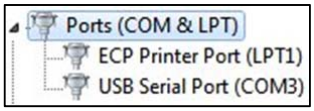
PRO.exe : Installation program for setup and signal display.

10.2.3 Configure Communication Port

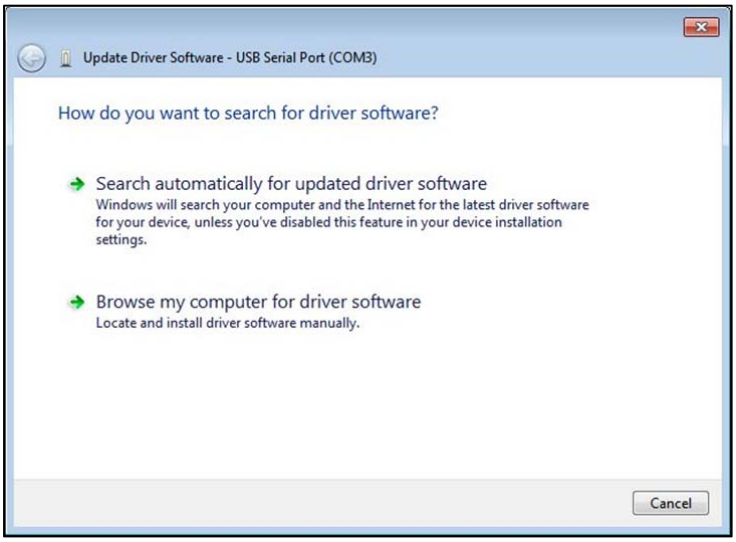
It is important to configure the communication port that will be dedicated to the Software before you start using it.

If you are using a **Windows 7 platform**, follow these steps to configure the port:

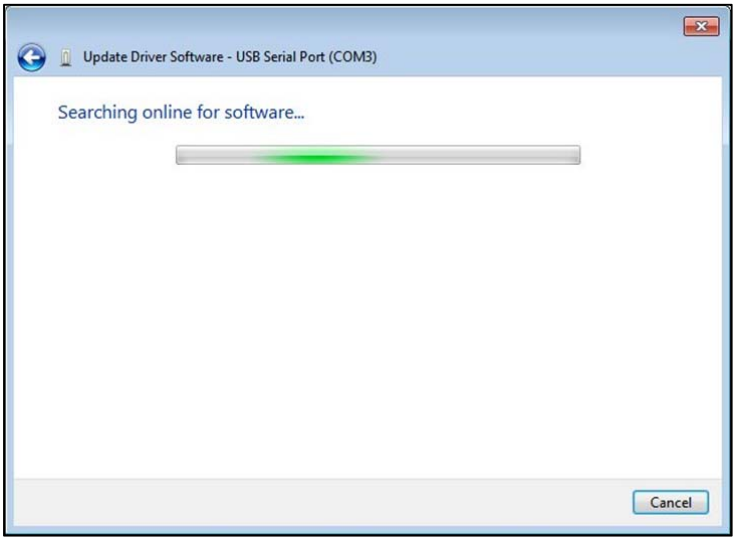
1. Connect the “IFM-485-ST” to the available port,
2. Right click “My Computer”,
3. Click “Manage”,
4. Click “Device Manager”,
5. Click “Ports (COM and LPT)”, a list of available ports appears as shown next:



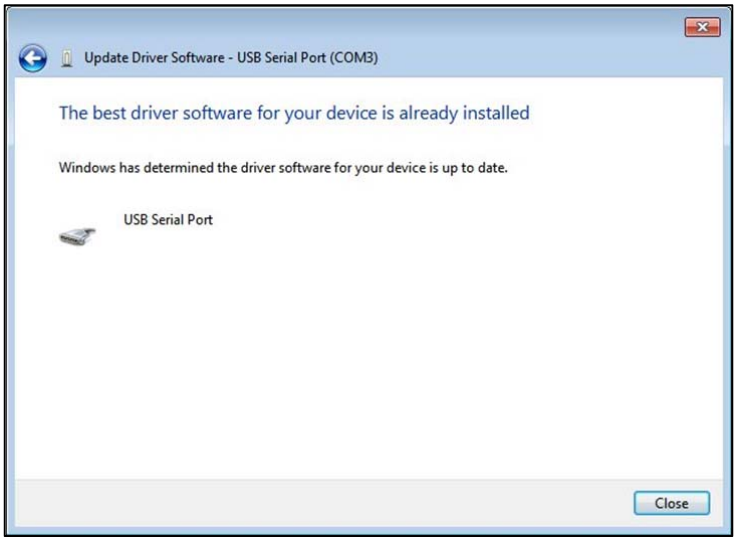
6. Right click “USB Serial Port (COM3)” to update its driver software,
7. Click (Update Driver Software…), the following window appears:


Update Driver Software - USB Serial Port (COM3)
How do you want to search for driver software?
Search automatically for updated driver software
Windows will search your computer and the Internet for the latest driver software for your device, unless you've disabled this feature in your device installation settings.
Browse my computer for driver software
Locate and install driver software manually.
Cancel

8. Select “Search automatically for updated driver software”, the following window appears:



9. Wait for the search to complete, the following window appears:


Update Driver Software - USB Serial Port (COM3)
The best driver software for your device is already installed
Windows has determined the driver software for your device is up to date.
USB Serial Port
Close

10. Click (Close).

If you are using an **XP platform**, follow these steps to configure the communication port:

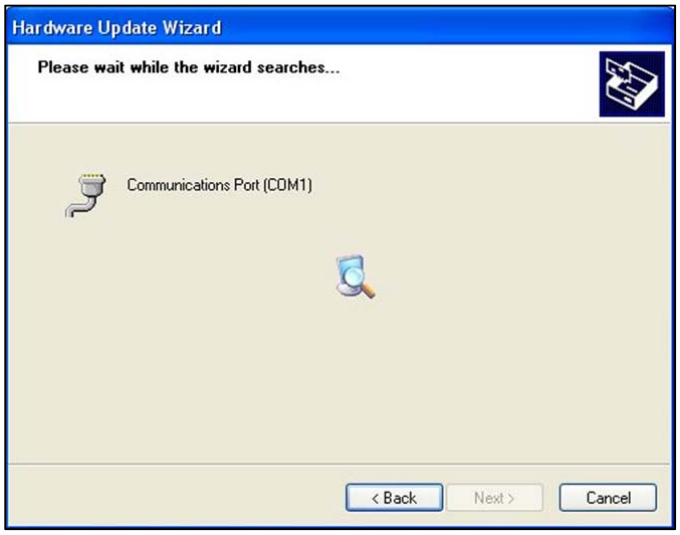
1. Right click “My Computer”,
2. Click “Manage”,
3. Click “Device Manager”,
4. Click “Ports (COM and LPT)”,
5. Right click “Communications Port (COM1)”, the following menu appears:

6. Click (Update Driver…), the following window apppears:

Hardware Update Wizard
Welcome to the Hardware Update Wizard
This wizard helps you install software for:
Communications Port (COM1)
If your hardware came with an installation CD or floppy disk, insert it now.
What do you want the wizard to do?
Install the software automatically (Recommended)
Install from a list or specific location (Advanced)
Click Next to continue.
< Back
Next >
Cancel

7. Select “Install the software automatically (Recommended)”,

8. Click (Next), the following window appears:



9. Wait while the wizard searches for the update, the following window appears:

Hardware Update Wizard
Cannot Continue the Hardware Update Wizard
The wizard could not find a better match for your hardware than the software you currently have installed.
Choose what you want to do.
To keep the current software, click Finish.
To search again in another location, click Back.
< Back
Finish
Cancel

10. Click (Finish).

NOTE!

- You can directly connect to the IFM-485-ST via the RS232 com.
- Every time you change the communication port you are using, you need to reconfigure its driver software.
- Port number varies depending on the system you are using.

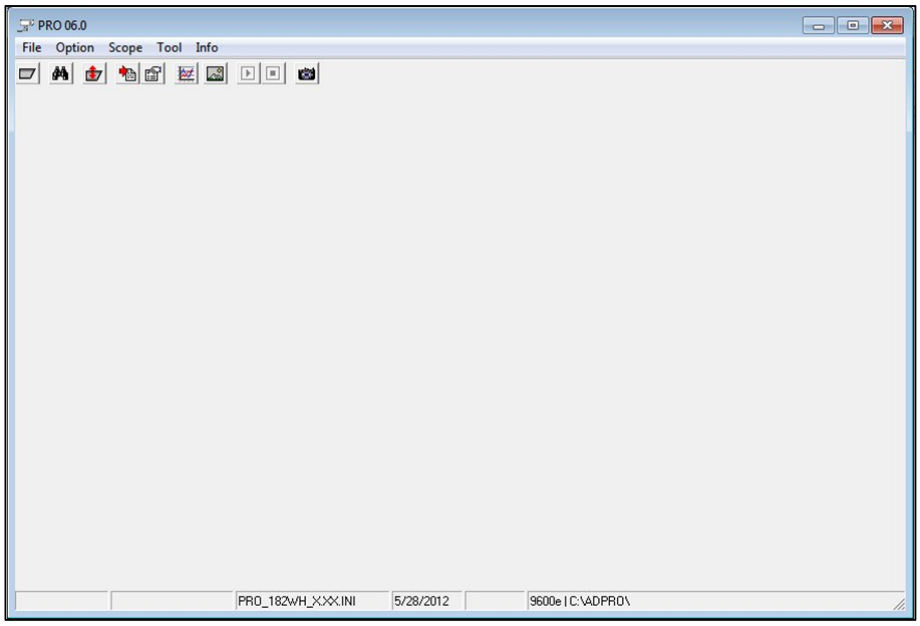
For more information on how to associate the communication port with the Software, refer to section (10.3.2 Select Communication Port).

10.3 Use Software

As mentioned earlier, the Software helps you to optimize the settings and monitor the detector(s) in use. After you have successfully mounted the detector and configured the settings you need, you can start using the Software.

Once installed, a shortcut is created for the ADPRO PRO Windows® Software and can be accessed through the applications menu, it appears as follows:

Activate the Software, the following window appears:



The ADPRO PRO Windows® Software provides various tools and features that allow you to control and monitor the detectors and maximize their benefit. They are categorized into menus for easier access.

In addition, you can access any tool or feature through the buttons that appear in the toolbar as follows:

Image	Action
	Open Detector INI
	Search Detector
	Up/download settings
	Debugger
	Statistics
	Scope
	View picture
	Run
	Stop
	Take picture

Moreover, the Software provides shortcuts through the keyboard for faster access to the required tool, as follows.

Shortcut	Action
<F1>	About the Software
<F2>	Open detector definition file window.
<F3>	Search for a detector.
<F4>	Up/Download
<Ctrl> + B	Beep

<F5>	Run scope
<Ctrl> + <F5>	Stop scope
<F6>	Change scroll direction, “right to left” or “left to right”
<F7>	Hide/ show grid
<F8>	Increase signal speed
<Ctrl> + <F8>	Decrease signal speed
<F9>	Clear scope
<F10>	Delete all triggers
<Ctrl> + <K>	Open scope window
<Ctrl> + <P>	Take picture
<Ctrl> + <V>	View picture
<Ctrl> + <A>	Picture auto
<Ctrl> + <O>	Picture memo
<Ctrl> + <M>	Open statistics window
<Ctrl> + <T>	Test
<Ctrl> + <D>	Open debugger window

The following sections discuss all the actions you can perform, the available tools and how to use them.

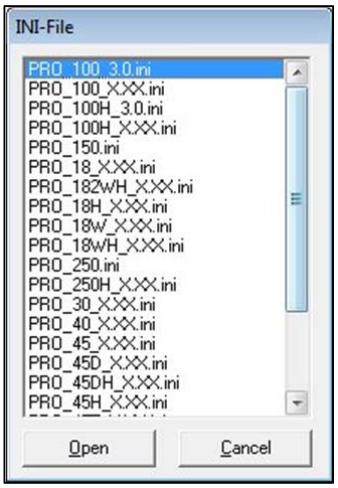
10.3.1 Select Detector

Before you start using the ADPRO PRO Windows® Software, you need to select the detector to be used. The Software normally finds the detector’s definition file automatically; however, this step is performed only if there is no automatic loading.

There are two methods for selecting the detector in use in order to load its definition file and connect it to the “IFM-485-ST” data bus.

First method:

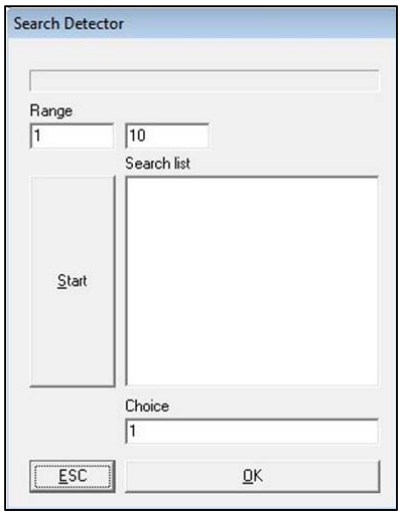
1. Click “File”,
2. Click (Open Detector INI),the following appears:



3. Select the detector,
4. Click (Open).

Second method:

1. Click “Option”,
2. Click (Search Detector),the following window appears:

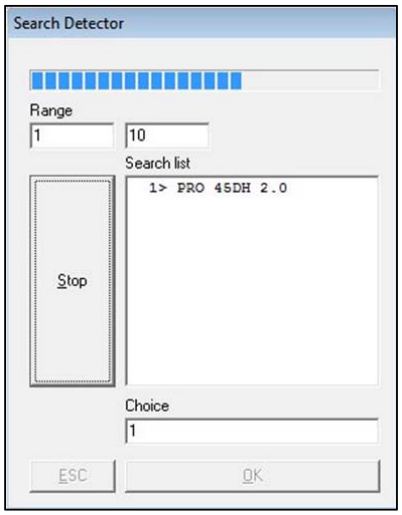


NOTE!

Detectors are given IDs (addresses) in the range of 1 to 254. Factory-set addresses are in the 1 to 10 range. It is recommended to narrow down the range when searching for a detector so as not to take time and retrieve the connected detectors more quickly.

Each detector must have a unique address, if more than one detector is given the same address and connected to the same bus, none of them will appear on the Software. To resolve this problem, disconnect all detectors and configure each one separately. This will ensure that no detector uses the same ID of another one.

3. Click (Start), or press keys <ALT> + <S>, a list of found detectors appears as shown below:

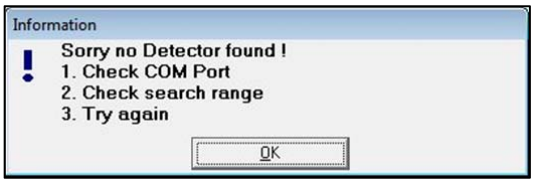


The number on the left of the “>” sign is the detector’s ID. The type of the detector and the firmware version number are on the right of the “>” sign.

You can stop the search process by pressing <ALT> + <S> or clicking (Stop).

To close the search window, click (ESC).

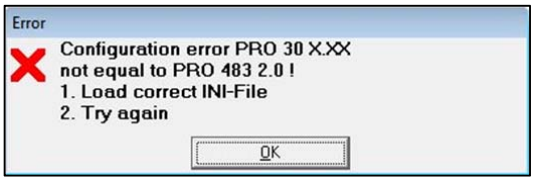
If no detectors are found, the following message appears:



The message shows the possible reasons for not retrieving any detector. Click (OK), check the error, and repeat the search.

4. Select the detector you want, or enter its identification number in “Choice” field,
5. Click (OK).

If you select the wrong detector, the following message appears:



Click (OK) then select the correct detector.

10.3.2 Select Communication Port

To select the communication port to which the “IFM-485-ST” data bus will be connected, follow these steps:

1. Click “Option”,
2. Click “Com Port”, a menu listing the available ports appears,
3. Select the port you want; it will be marked with a (☑) sign.

NOTE!

Communication ports’ numbers vary according to the system you are using and available ports.

10.3.3 File

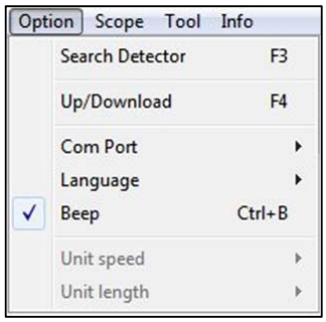
This option enables you to select the detector in use in order to load its definition file and connect it to the “IFM-485-ST” data bus.

For more information, refer to section (10.3.1 Select Detector).

10.3.4 Option

Through this menu you can search for a certain detector, upload/ download detector settings, select port, etc.

Option appears as shown next:



The following sections discuss, in detail, the actions you can perform.

10.3.4.1 Search Detector

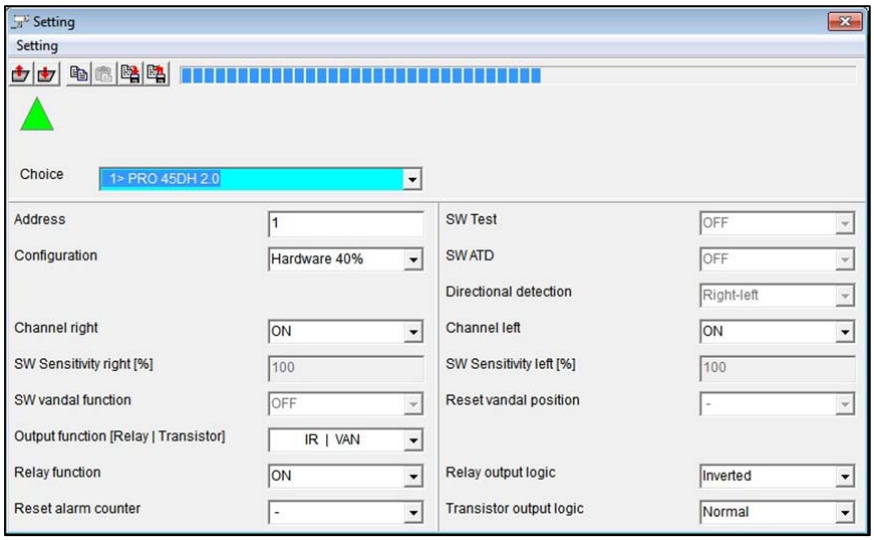
To search for a detector, refer to section (10.3.1 Select Detector).

10.3.4.2 Up/Download

The Software simplifies the process of detectors configuration and allows you to save time spent in setting other detectors values. You can configure a detector and use the same settings for other detectors of the same type connected to the Software.

You can manage setting options, upload a detector's settings, download them from a definition file, and save them to a new definition file, etc.

The **Up/Download** window appears as follows:

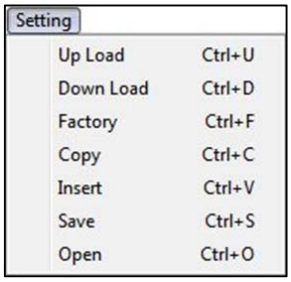


Settings window is detector-model-dependent and is primarily designed to review and change detector's parameters. These include the overall sensitivity, mounting height, etc.

The window shows the detailed setting options of the selected detector. It also shows the actions you can perform where each one is represented with a certain button as follows:

Image	Action
	Upload settings to detector
	Download detector's settings
	Copy
	Insert
	Save to configuration file
	Load from configuration file

Also, the above actions can be accessed by clicking “Setting”, the following menu appears:



The following sections discuss all the actions you can perform, the available tools and how to use them.

NOTE!

Setting options depend on detector model.

Displayed positions and displayed terms of option may vary depending on detector model.

To select a detector to load its settings, you can:

- Select the detector from the drop-down menu then click ( ).
- Press <F3> and search for it by following the same steps mentioned in section (10.3.1 Select Detector), then click ( ).

10.3.4.2.1 Setting Options

The Setting window displays the setting options for the selected detector where each field represents a certain value as follows:

Choice		Lists all detectors of the same model.
Address		Displays selected detector’s identification number.
Configuration		Displays current operation mode: Hardware or Software.
		NOTE! Operation modes can only set by DIP-switches 1 and 2 on connector board of detector.
SW range		Detection range can be individually set in seven steps. Pre-set values vary depending on model. Reduction of nominal range affects only coverage of long-range channel (applies to long-range models only).
SW sensibility/ SW sensitivity [%]		Modifies the overall sensitivity within a bandwidth 50% - 150%. Reduction of overall sensitivity changes alarm threshold but leaves coverage of long-range channel unchanged.
Channel L/M/S[1]	ON	Long, medium and short range channels may be enabled individually by selecting “ON” from drop-down menu.
	OFF	Long, medium and short range channels may be disabled individually by selecting “OFF” from drop-down menu.
Channel right/left[2]	ON/ OFF	Enables/ Disables right/ left channel.

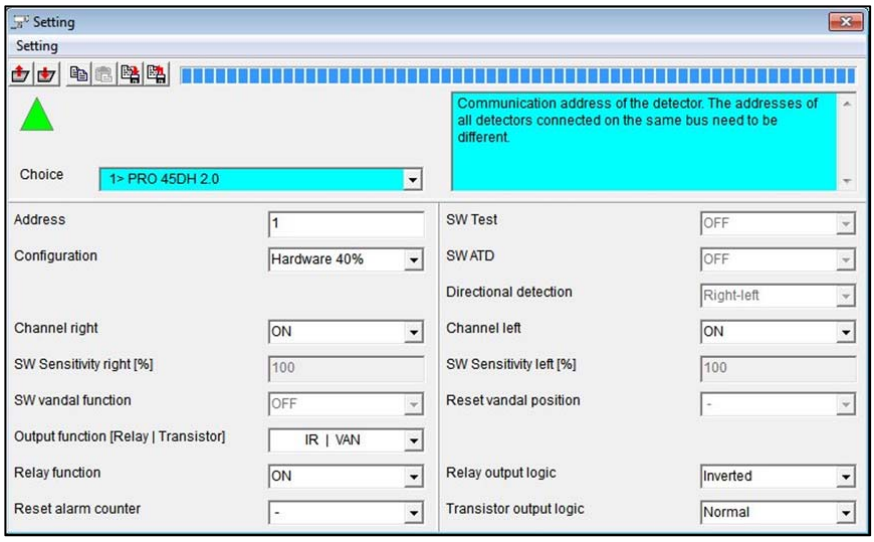
SW sensitivity right/left [%][1]		Modifies sensitivity of right/left channel within bandwidth 20 % - 139.39 %. Reduction of overall sensitivity changes alarm threshold but leaves coverage of right/left channel unchanged.
SW ATD	ON	Enables “Adaptive Threshold Discrimination”.
	OFF	Disables “Adaptive Threshold Discrimination”.
		NOTE! Disable ATD function prior to walking test to optimize performance of detector. When putting “SW Test” to “ON”, ATD function is disabled automatically in Software mode.
SW Test	ON	Enabled to perform walking test with Wireless walking tester CT-PRO.
	OFF	Disabled for normal operation.
SW Vandalism protection/SW vandal function	ON/ OFF	Enables/ Disables “Anti-Tamper Protection”.
Reset vandal position	ON	Writes new alignment position into non-volatile RAM as baseline for anti-tamper protection in case of misalignments.
	OFF	Upload of settings to control device happens always automatically in “OFF”.
	-	Not selected.
Relay function	OFF	Disables output function of relay.
	ON	Enables output function of relay.
Output function [Relay | Transistor]		If relay function is set to “ON”, the following two options are available in the drop-down menu: 1. “IR + VAN | IR + VAN”: Using relay and transistor open collector to signal intrusion alarms and tamper alarms. 2. “IR + VAN”: Using only relay to signal intrusion alarms and using only transistor open collector to signal tamper alarms. This allows identifying alarms.
Reset alarm counter	ON	Resets alarm counter to “zero” at next download of settings to detector.
	OFF	No resetting of alarm counter to “zero” at next download of settings to detector. Upload of settings to control device happens automatically in “OFF”.
	-	Not selected.
Relay output logic	Normal	Relay opens when in alarm.
	Inverted	Relay closes when in alarm.
SW pulse count[2]	0 - 10	Number of additional pulses (0 – 10) before an alarm is generated.
	OFF	Disables “Adaptive Threshold Discrimination”.
		NOTE! Disable ATD function prior to walking test to optimize performance of detector.
SW Mounting[3]	HIGH	Mounting height above than 3 m (10 ft).
	LOW	Mounting height less than 3 m (10 ft).

[1] Applies only to long-range detector models

[2] Applies only to directional detector models

[3] Applies only to volume detector models

Also, the Setting window provides you with additional information regarding the setting options, as shown in the following figure:



The above example shows help information regarding the detector's address.

To view the help information of any other field, simply place the cursor in the required field and the information appears in the upper box.

To close the Setting window, click ( ).

NOTE!

If you attempt to close the Settings window before saving the changes you make, the following message appears:

If you are sure you want to exit the window without saving, click (Yes); otherwise, click (No) then save the changes you made.

10.3.4.2.2 Upload Settings

To upload settings to detector, follow these steps:

1. Make the changes you want to the fields you can change,
2. Click ( ). Successful upload is represented with ( ).

NOTE!

Make sure to click ( ) to save the changes you made; otherwise, they are lost.

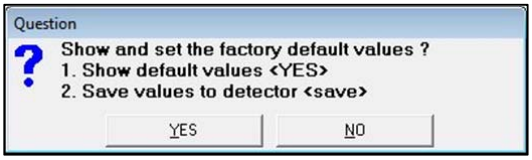
10.3.4.2.3 Factory Settings

You can reinstate the factory default configuration to the detector instead of the changes you made in the following cases:

- The detector does not seem to work properly.
- A previous version of the ADPRO PRO Windows® Software was used on the same detector.

To display and use the factory default settings, follow these steps:

1. Click (Factory), the following message appears:



2. Click (Yes) to replace the values with the factory ones,
3. Click ( ) to save them in the detector's configuration file.

10.3.4.2.4 Download Settings

To download the detector's settings, follow these steps:

1. Make the changes you want,
2. Select the detector,
3. Click ( ).

The configuration status is represented with the following symbols:

: Uploading configuration

: Changed configuration

: Communication problem

: Downloading configuration

10.3.4.2.5 Copy Settings

To copy the settings of a detector and use them in another one, follow these steps:

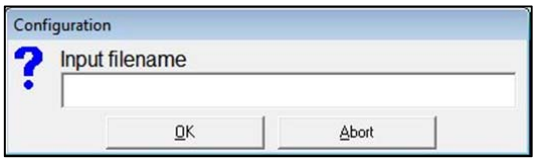
1. Select the detector which settings you want to copy,
2. Click ( ),
3. Select the detector to which you want to apply the copied settings,
4. Click ( ).

10.3.4.2.6 Save Settings to CFG File

To save the configuration in the "CFG" sub-folder accessed through the ADPRO PRO Windows® Software folder saved in the computer, follow these steps:

1. Make the changes you want,

2. Click ( ), the following field appears:



3. Enter file name,
4. Click (OK) to save, or (Abort) to cancel the action.

10.3.4.2.7 Load Settings from CFG File

To load the configuration saved in a CFG file, follow these steps:

1. Click ( ), the following window appears:

2. Select the file,
3. Click (Open), the configuration appears in the Settings window so you can make sure you are using the desired configuration.
4. Click ( ) to upload settings to detector.

10.3.4.3 Com Port

For more information on how to select the port you want to use, refer to section (10.3.2 Select Communication Port).

10.3.4.4 Language

The Software provides the settings and parameters in various languages displayed in this menu.

To switch between the available languages, follow these steps:

1. Click “Language”,
2. Select the language you want.

Parameters and settings are now displayed in the selected language, but as for the interface language itself it is only available in English.

10.3.4.5 Beep

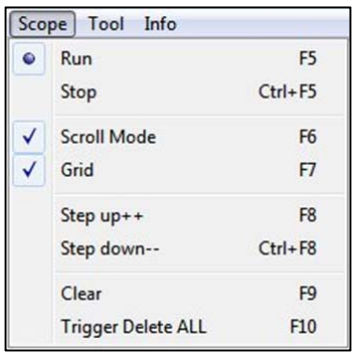
If this option is checked, whenever the detector detects something, you'll hear a beep.

10.3.5 Scope

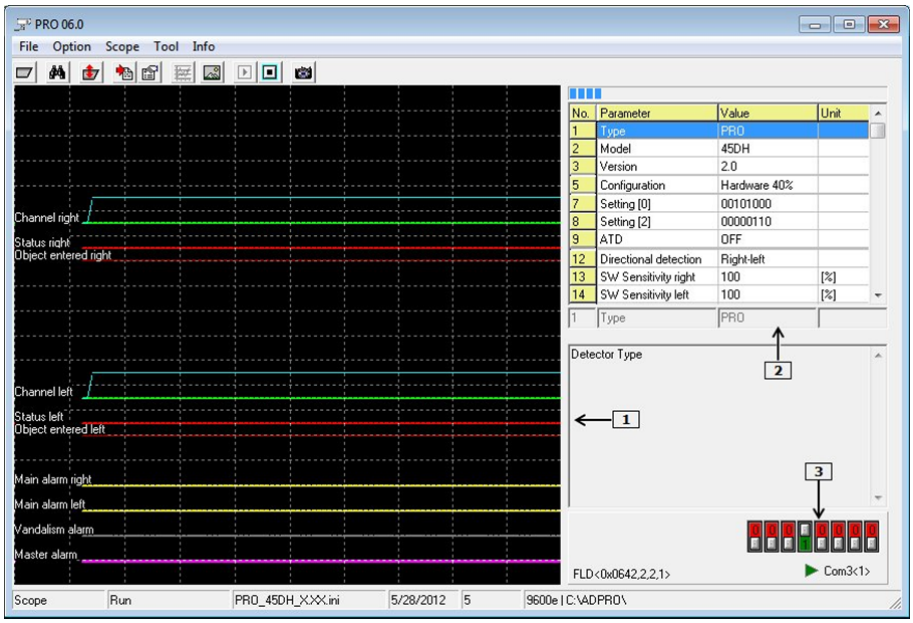
The Scope view is the most powerful feature of the software. It shows in real-time the signal strength of each zone, if the monitored detector features multiple detection zones. Simultaneously, it shows the actual alarm threshold, the general alarm status, and various parameters such as total alarm count, strongest signal level received, and current settings of the DIP switches in the detector, etc.

Through this menu you can manage the Scope view by stopping or running it, selecting the view mode, increase or decrease signal speed, etc.

Scope menu appears as shown below:



Scope view appears as follows:



The **Scope view** illustrates the cause/response relationship between inputs and output. The view shows all signals and their levels on a time axis ; it allows for a detailed analysis of the detector's operation.

The **Scope view** appears automatically after a detector has been selected from the search list. The signals on the screen represent the current readings of the detector and are helpful for resolving problems as well as managing certain installation features.

The Scope window is divided into the following three parts:

- **Scope view (1)**: Scope view is used to for signal monitoring; it shows IR amplitude, alarm-threshold and other vital parameters in real-time. In addition, it shows a varying amount of lines as follows:
  - Green (Sensor Signal): shows the signal levels of the PIR sensor.

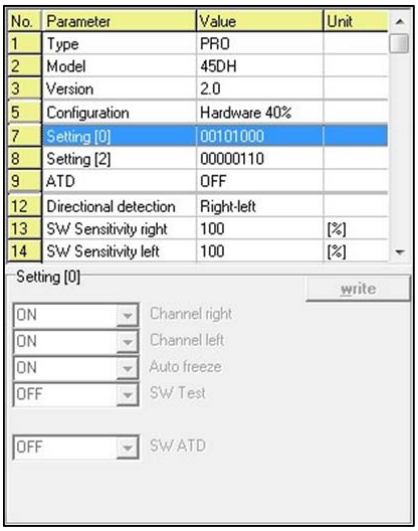
- Red (IR Alarm): shows the IR event caused by the sensor signal.
- Purple (Master Alarm): shows the actual output signal at relay.
- Blue (Alarm threshold).
- Yellow (Actual status).

NOTE!

Alarms appear on Scope view only if the alarm generating detector is selected.

- **Table of Settings (2)**: This table shows the current settings of the selected detector; it consists of the detector's parameters such as sensitivity, desired detection range, their values and unit.

  To view the values of a certain parameter, click it, its values appear as shown below:

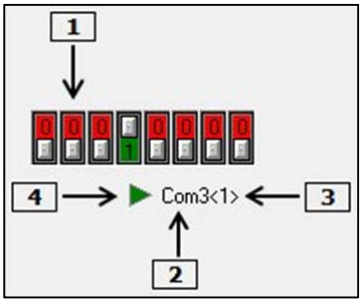


  The selected parameter's values appear in view-mode only. Any changes made to the settings are directly reflected on this table and the threshold.

NOTE!

Information displayed in table may vary depending on detector model.

- **Settings of DIP-switches, port and address information (3)**: You can view the status of the DIP-switches that were set upon configuring the detector, and other information as shown in the following figure:



1. Status of current DIP-switches.
2. Used port.
3. Detector´s identification number.

4. Detector's status, it is represented with an arrow which color changes according to the current status as follows:

: OK

: Fault

: Synchronizing

NOTE!

Display of DIP-switches may vary depending on detector model.

DIP-switches values are controlled from the detector itself. A table that shows the switches functions is available on a sticker on the detector's lid.

You can control the Scope view through the following:

Action	Button	Shortcut
Run the Scope	Run	<F5>
Stop the Scope	Stop	<Ctrl> + <F5>
Select Scope view mode	Scroll Mode	<F6>
	Grid	<F7>
Increase signal speed	Step up++	<F8>
Decrease signal speed	Step down- -	<Ctrl> + <F8>
Clear Scope view	Clear	<F9>
Delete all triggers	Trigger Delete ALL	<F10>

As shown in the table above, there are two scope modes:

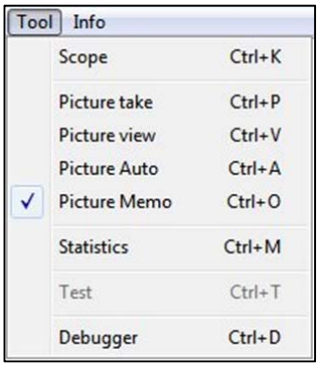
- **Scroll Mode**: If checked, the signal is continuous and its direction is from right to left. If unchecked, the signal's direction is from left to right and each time <F6> key is pressed the signal starts from the beginning.

  To switch between Scroll modes press <F6>.
- **Grid:** If selected, horizontal and vertical lines appear on the Scope in addition to the signals.

10.3.6 Tool

This menu enables you to take pictures of the scope and save them in the computer, view statistics of alarm states, and identify communication problems, etc.

Tool menu appears as follows:



The following sections discuss all the actions you can perform.

10.3.6.1 Scope

To open the Scope view, click (Scope) or press <Ctrl> + <K>.

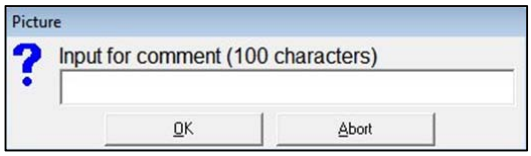
For more information on actions you can perform in Scope view, refer to section (10.3.5 Scope).

10.3.6.2 Picture Take

This tool enables you to take pictures of the Scope view and save them in the “BMP” sub-folder accessed through the ADPRO PRO Windows® Software folder. You can use them to compare readings, monitor readings on certain times, etc.

To take a picture and save it, follow these steps:

1. Click (Picture take), the following field appears:

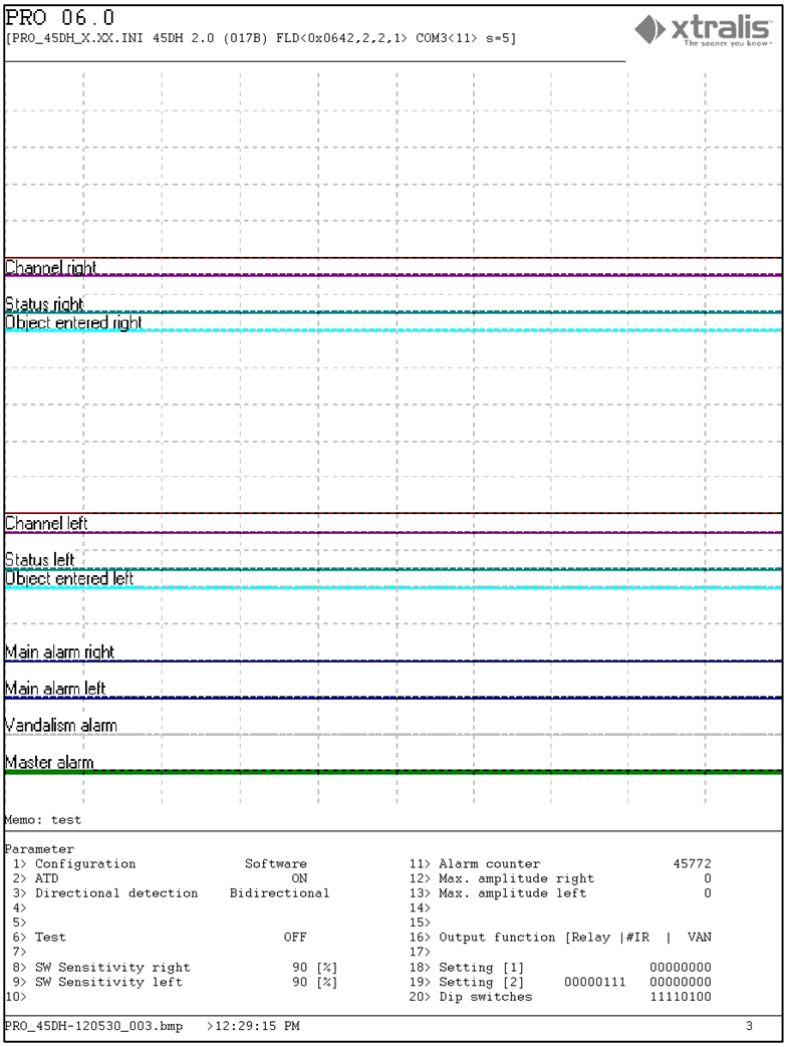


2. Enter your comment,
3. Click (OK).

The picture is saved in the BMP and given a name according to the following naming convention:

“PRO-Model No-yymmdd_nnn.txt” where: yy=year, mm=month, dd= day, nnn=sequential number (1 - 999).

To view a picture, open it from the computer, it appears as follows:

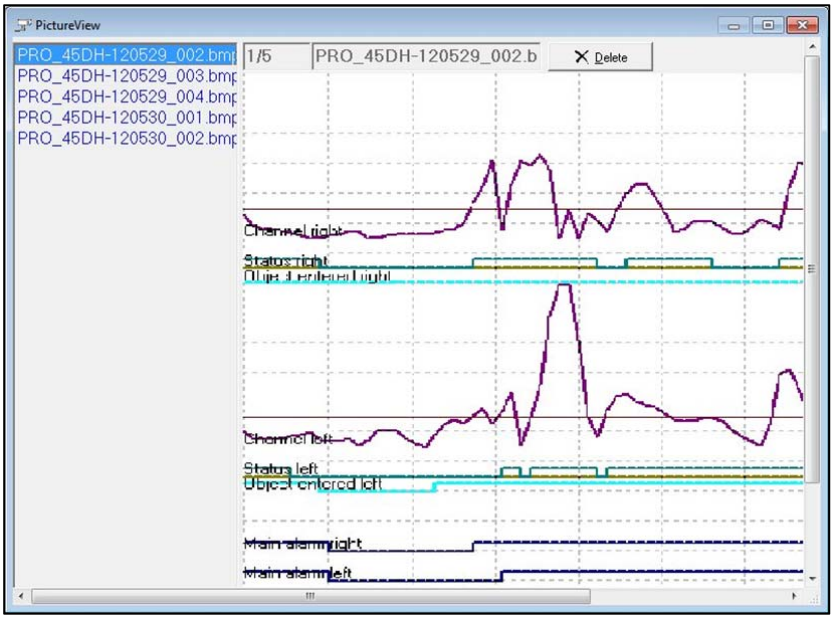


The image shows the Scope, comment, and settings at the time that picture was saved.

However, pictures can be viewed from the Software itself as explained in the next section.

10.3.6.3 Picture View

You can view the pictures directly from the Software for easier access by clicking (Picture view). The following window appears:



The window is divided into two parts: the left one lists all the pictures and the right a preview of the selected picture.

To delete a picture, follow these steps:

1. Select the picture, its name is displayed in the field,
2. Click (Delete). It is immediately deleted from this window and from the “BMP” folder as well.

To close the window, click ( ).

10.3.6.4 Picture Auto

If this feature is checked, each time the detector reads a signal or detects a movement, a picture is automatically taken and saved in the “BMP” folder.

10.3.6.5 Picture Memo

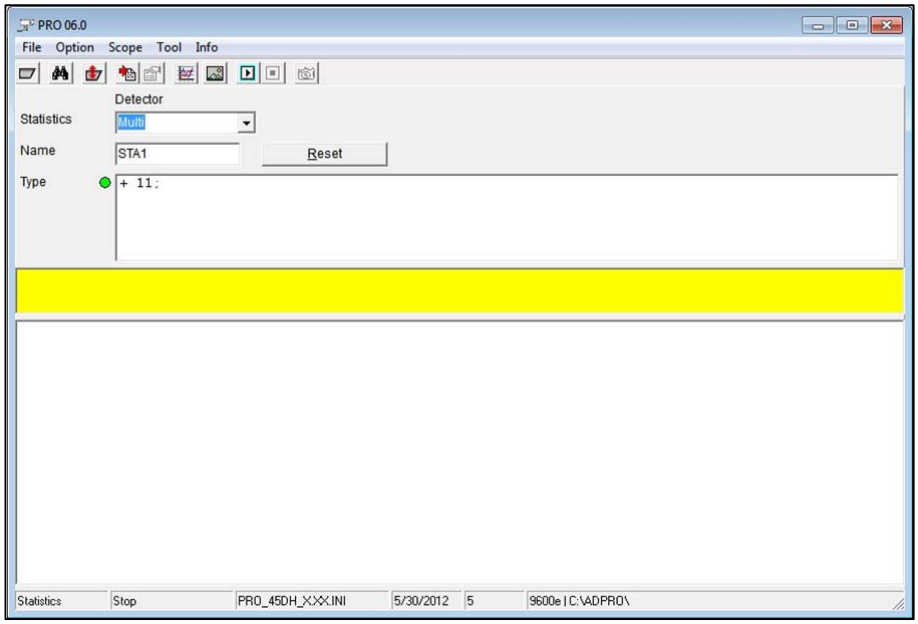
If this feature is checked, the “Picture take” tool is activated and you can take pictures of the Scope.

10.3.6.6 Statistics

Through this feature you can view data the detector transmits to the controller. The Statistics view logs the actual alarm status of all detectors that have been discovered during the initial “Search for Detectors” process. In addition to general alarm information, the view details the zone that issued the alarm. It also shows warnings and detector‘s status under the system column. Every status change from every detector adds a line in this log view.

This information is stored in text files on a daily basis, one file per detector. Files are saved in the “DAT” sub-folder accessed through the ADPRO PRO Windows® Software folder.

Click (Statistics), the following window appears:

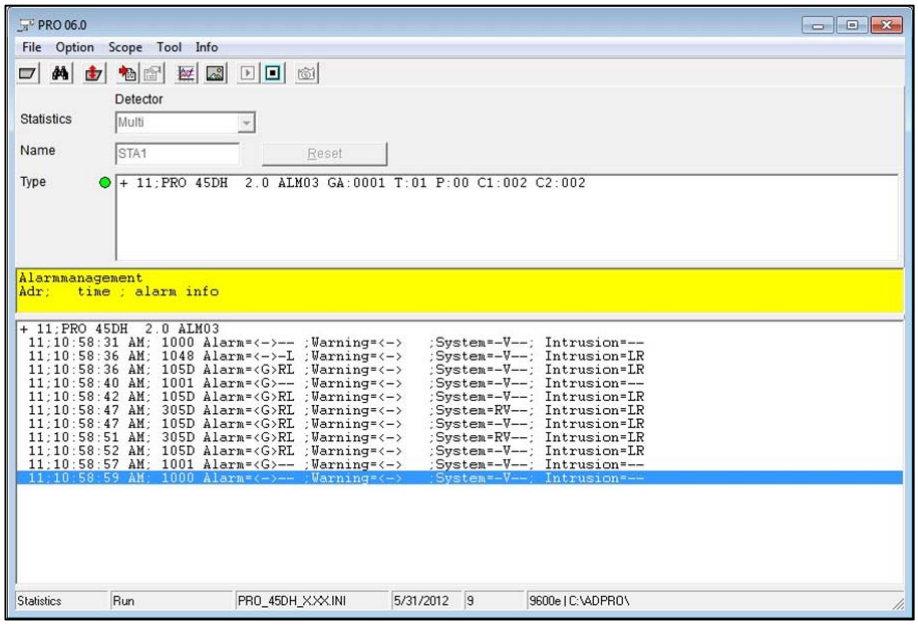


The window is divided into the following sections:

- **Connected Detectors (1)**: displays all connected detectors with information about identification number, firmware version number and alarm counters.
- **Type (2)**: Each symbol indicates a status as follows:
  (●): connected.
  (●): not connected.
- **Log (3)**: Displays the actual log.

To generate a statistics file and save it, follow these steps:

1. Enter file name,
2. Click (▣) to start the viewing the transmitted data, it appears as in the example below:


PRO 06.0
File Option Scope Tool Info
Detector
Statistics
Multi
Name
STA1
Reset
Type
+ 11;PRO 45DH 2.0 ALM03 GA:0001 T:01 P:00 C1:002 C2:002
Alarmmanagement
Adr; time ; alarm info
+ 11;PRO 45DH 2.0 ALM03
11;10:58:31 AM; 1000 Alarm=<->-- ;Warning=<-> ;System=-V--; Intrusion=--
11;10:58:36 AM; 1048 Alarm=<->-L ;Warning=<-> ;System=-V--; Intrusion=LR
11;10:58:36 AM; 105D Alarm=<G>RL ;Warning=<-> ;System=-V--; Intrusion=LR
11;10:58:40 AM; 1001 Alarm=<G>-- ;Warning=<-> ;System=-V--; Intrusion=--
11;10:58:42 AM; 105D Alarm=<G>RL ;Warning=<-> ;System=-V--; Intrusion=LR
11;10:58:47 AM; 305D Alarm=<G>RL ;Warning=<-> ;System=RV--; Intrusion=LR
11;10:58:47 AM; 105D Alarm=<G>RL ;Warning=<-> ;System=-V--; Intrusion=LR
11;10:58:51 AM; 305D Alarm=<G>RL ;Warning=<-> ;System=RV--; Intrusion=LR
11;10:58:52 AM; 105D Alarm=<G>RL ;Warning=<-> ;System=-V--; Intrusion=LR
11;10:58:57 AM; 1001 Alarm=<G>-- ;Warning=<-> ;System=-V--; Intrusion=--
11;10:58:59 AM; 1000 Alarm=<->-- ;Warning=<-> ;System=-V--; Intrusion=--
Statistics
Run
PRO_45DH_XXX.INI
5/31/2012
9
9600e | C:\ADPRO\

Note that a line is created for each detected event, along with the date and event description.

3. Click ( ) to stop the process and save the file.

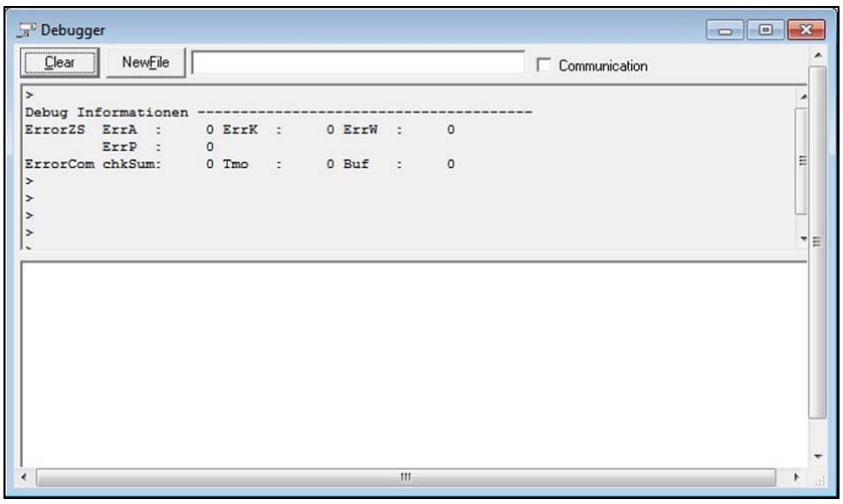
The file is saved in the “DAT” folder and named according to the following naming convention:

“STAz-yymmdd_nnn.xxx” where: z=number of statistics file, yy=year, mm=month, dd= day, nnn=sequential number (1 - 999), xxx=address number.

10.3.6.7 Debugger

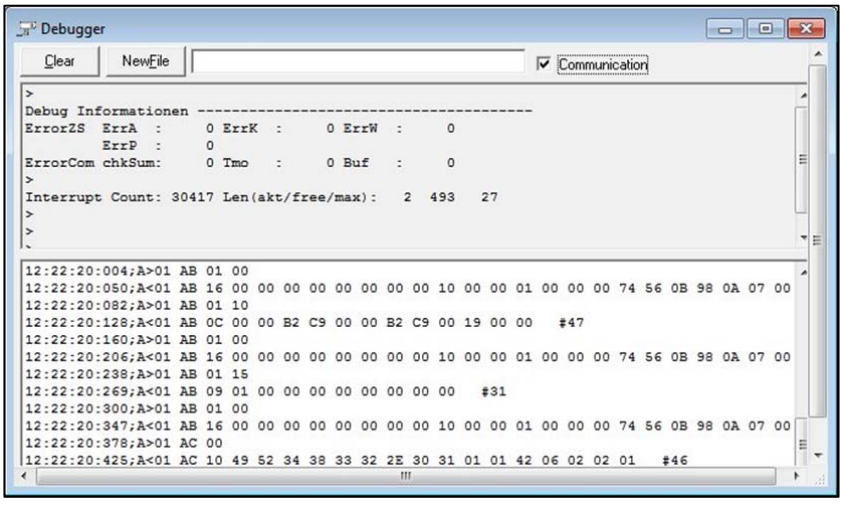
This tool helps record all communication made between the detector and computer and save this information in files stored in the computer. These files are saved in the “DAT” sub-folder accessed through the ADPRO PRO Windows® Software folder.

Click (Debugger) to open the Debugger window, it appears as follows:



To start recording of data traffic and save this information in the computer, follow these steps:

1. Click the checkbox next to “Communication”, the window appears as follows:



2. Click (New File).

Data is saved in the file; you can create another file by clicking (NewFile).

To stop recording of data, click (Clear).

Files are named according to the following naming convention:

"DBG-yymmdd_nnn.txt" where: yy=year, mm=month, dd= day, nnn=sequential number (1 - 999).

The following abbreviations are used in data recording:

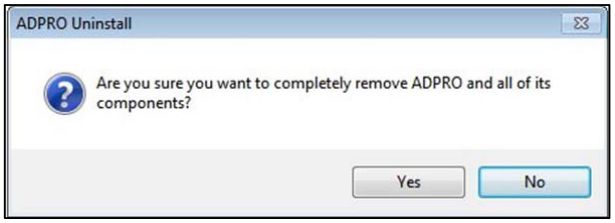
Abbreviation	Error
ErrA	Error counter
ErrK	Error counter configuration
ErrW	Error counter working
ErrP	Error counter synchronisation
ChkSum	Error counter check sum
Tmo	Error counter timeout
Buf	Error counter buffer

10.4 Uninstall Software

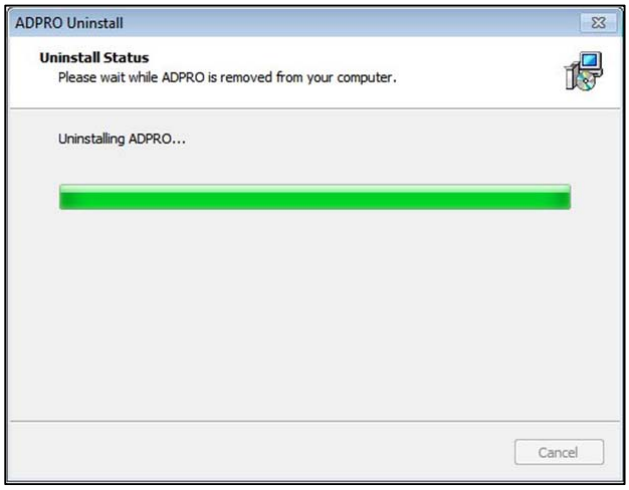
You might need to uninstall the ADPRO PRO Windows® Software for any reason; the Software enables you to do so by providing you with a user-friendly wizard.

To uninstall the Software, follow these steps:

1. Open the folder in which you have installed the Software,
2. Double click on "unist000.exe", the following message appears:



3. Click (Yes), the following window appears:



4. Wait till the uninstallation process is complete, the following message appears:

5. Click (OK).

11 Normal Operation

11.1 Connection Options

11.1.1 Contacts

All detectors can be connected with potential-free contacts or open collector outputs to other systems such as:

- CCTV monitoring
- A burglar alarm system or
- A management system

For the purposes of alarm transmission. This universal use is also guaranteed for proprietary systems. The detectors also provide enough space for the installation of bus connection modules of the respective systems

11.1.2 Permanent Links

If, however, detectors are continuously connected to a control centre, connection to a PC via interface module IFM-485-ST is required. The detector must be in software operating mode.

Advantages

A continuous operation of the detector gives the following advantages:

- Remote access setting (no work on a ladder, no accidental misadjustment)
- Signal monitoring/ verification
- Management of up to 16 detectors with a maximum bus length of 1000 m

12 Accessories

12.1 IFM-485-ST - Interface Module RS-485

The IFM-485-ST is an interface module which allows you to convieniently connect the RS-485 bus of the detector to the USB or RS-232 bus of your computer or control panel.

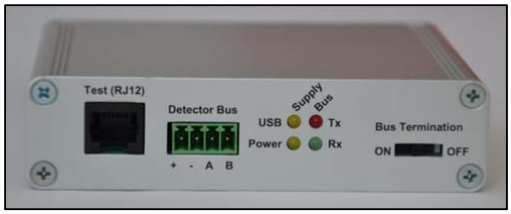
Advantages

This product gives the following advantages:

- Alarm management/ monitoring signal
- Remote access to detector
- Connection of up to 16 detectors to a data bus (maximum bus length including ‘stitches’: 1000 m)
- For use together with security and traffic detectors from Xtralis

Requirement

- PRO software (see chapter 14).

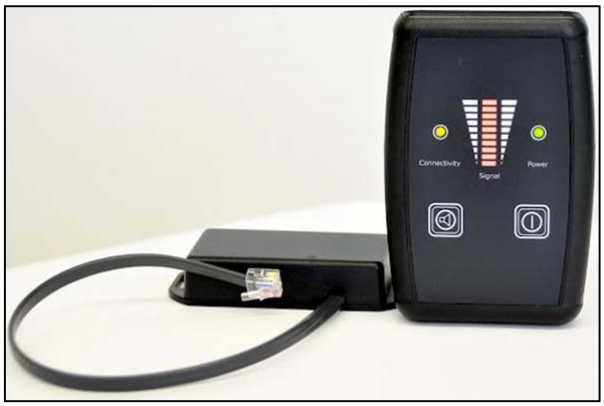


12.2 AD 851 - Alignment Telescope

This scope enables precise adjustment of the detector over denominated detection ranges of up to 150 m.

12.3 CT PRO2 - Wireless Walk Tester

The wireless walk tester CT PRO2 enables precise adjustments of the detector over the nominal detection range. Optical, as well as acoustic indications, plus a LED bar showing the signal strength makes this product a ‘must have’ tool.



The CT PRO2 consists of a transmitter connected to the RS-485 test socket in the detector and a battery-operated receiver.

12.4 ZA P-L1 – Pole-mount Attachment

Suitable for all models. This allows the detector to be mounted on a pole.

The attachment is suitable for masts with diameter of 40-160 mm.

12.5 AD653 - Pole-Mount for PRO-250H

Especially for PRO-250H. The detector can be mounted on a mast with this special holder.

The attachment is suitable for masts with diameter of 40-160 mm.

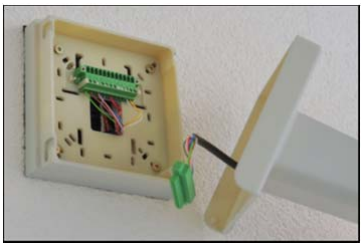
12.6 PRO-CMB-W - Cable Managed Bracket

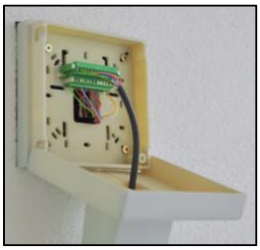
This robust and durable cable managed bracket can be used for all detectors (not PRO-250H). This optional accessory offers an easy and quick solution for an efficient installation.

- Hidden cabling discouraging cable vandalism
- Standard compliance
- Tamper protection and detection (including sealable locking screw)
- Tamper switch for detection of removal from mounting surface and opening the base junction box
- Automatic tamper alarm of the detector when housing is opened or tilt (vandalism alarm)
- Field of view respectively range, sensitivity and area adaptable

- Pre-wired for easy and fast installation
- Off-site assembly preparation (address, parameter pre-setting etc.) to keep expensive parts in a safe environment until they were needed)
- Plug & Play final installation

An integrated 14-pin terminal in the base plate allows seperate wiring and detector installation for an efficient work.



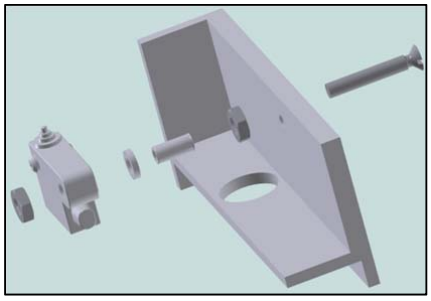


The bracket is retractable and can be opened at any time for maintenance or service reasons. For your safety and convenience (hands-free) the bracket is kept in a retaining fixture.

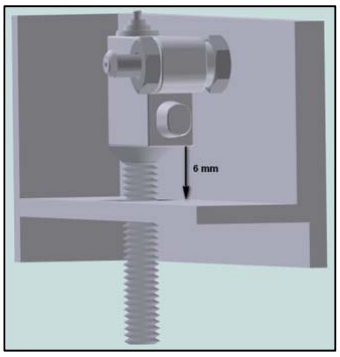
An additional pole mount accessory is also available as an option for hidden cabling on poles to protect against vandalism.

12.6.1 PRO-CMB-S — Tamper-Switch (PRO-CMB-S)

In some applications or in some standards a removal from mounting surface is required. As these requirements may not be covered by the “Tilt Alarm” an additional tamper-switch can be built-in into the cable managed bracket. This tamper-switch is optional available as a retro-fit kit.



The design and position of this tamper-switch is done in that way, that the removal from the mounting surface, as well as the opening of the base-plate with the cable terminal inside, is detected. This switch can be used as a separate zone or can be connected to the tamper-switch/tilt alarm of the detector housing. Refer to quick setup guide, provided with the product shipment of PRO-CMB-W.



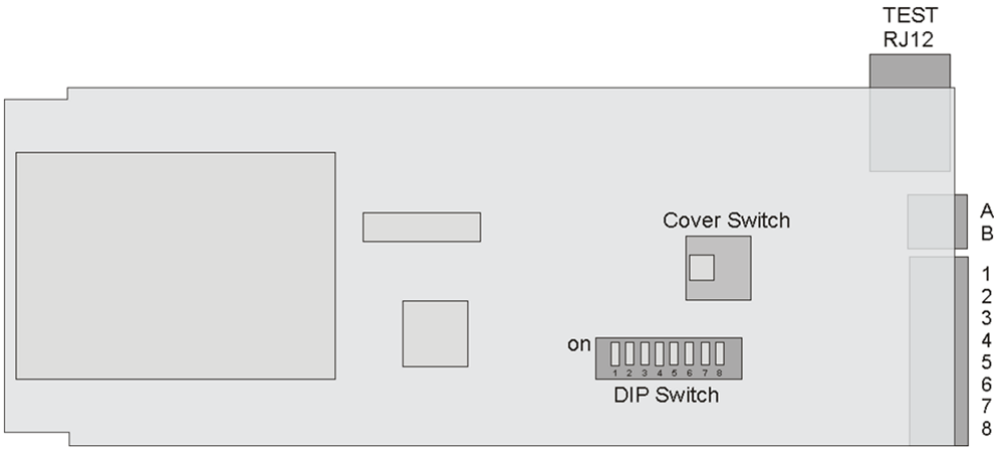
May be the mounting surface is not always plane and smooth. This can be adjusted by the screw (not included in the kit). It is recommended to have a distance of 6 mm between screw head (upper edge) and the bottom surface of the cable managed bracket. Take care that the connection cable is not trapped and can move easily to ensure both detections (remove and opening).

NOTE!

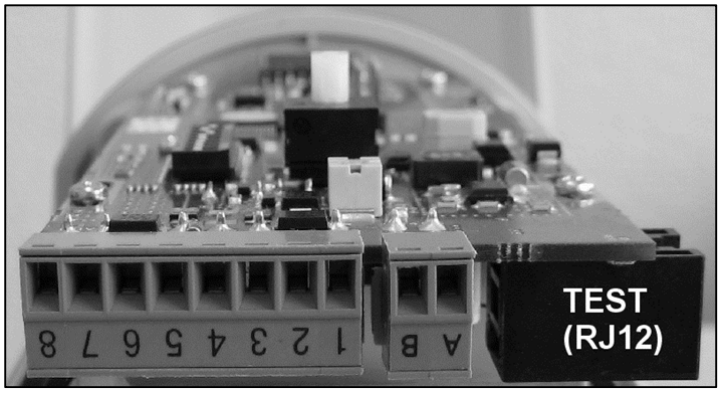
For proper operation a final test is recommend as mandatory.

13 Diagram

13.1 Terminal – Top view (all models except PRO-250H)



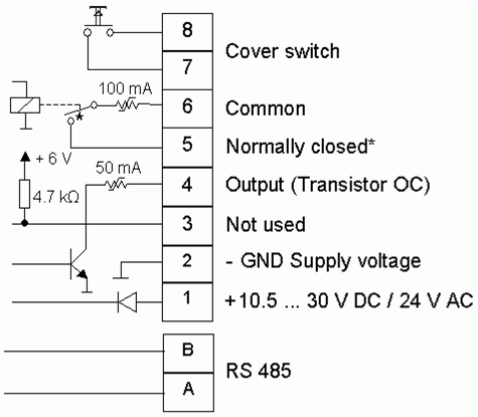
13.2 Terminal – Side view (all models except PRO-250H)



14 Electrical Connections

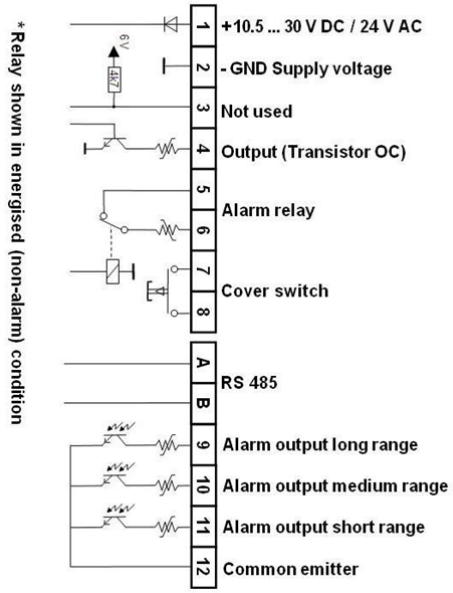
14.1 Electrical Pin Assignment for Detectors

14.1.1 All Models (except PRO-250H)



* Relay shown in energised (non-alarm) condition

14.1.2 PRO-250H



14.2 Connection of the interface module IFM-485-ST

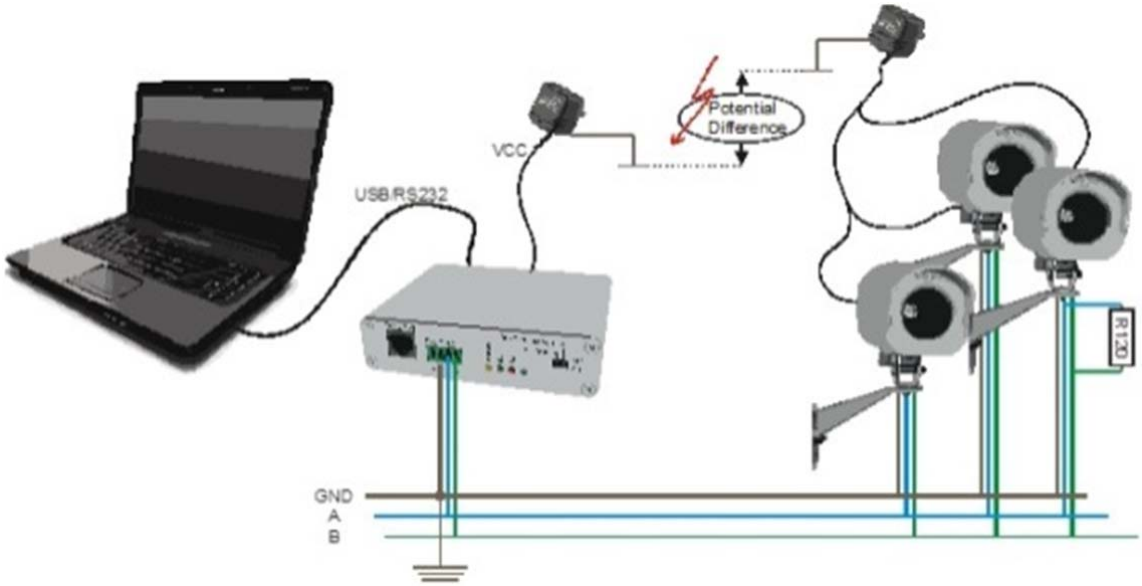
14.2.1 A single detector to the interface module IFM-485-ST

1. Connect the RS-485-Bus of the detector via the RJ12 test jack or A / B cables to the interface module IFM-485-ST.
2. Then connect the interface module to a PC on which you have previously installed PRO software via a USB or RS-232 cable.

14.2.2 Several detectors to the interface module IFM-485-ST

To connect more than one detector to a PC via the RS-485 data bus, follow these steps:

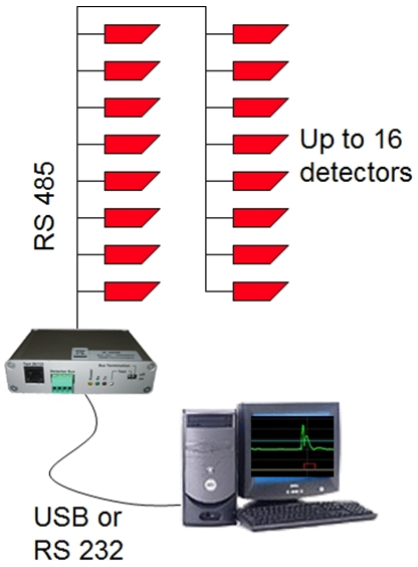
1. Connect every detector to a computer on which the PRO software is running, and allocate an individual address (1-254) to the software settings (see chapter 10.1.4). Each address can be used only once.
2. Connect detectors using parallel or star cabling.
3. Install a terminating resistor of 120 Ω between terminals 485-A and 485-B on the board of the last detector on the bus. In the interface module IFM-485-ST switchable resistance is already installed. Thus the data connection is properly terminated at both ends of the bus.



It is important to note that the total cable length including ‘stitches’ does not exceed 1000 m.

NOTE!

If more than one detector is connected to the interface module IFM-485-ST each detector must have a unique address.

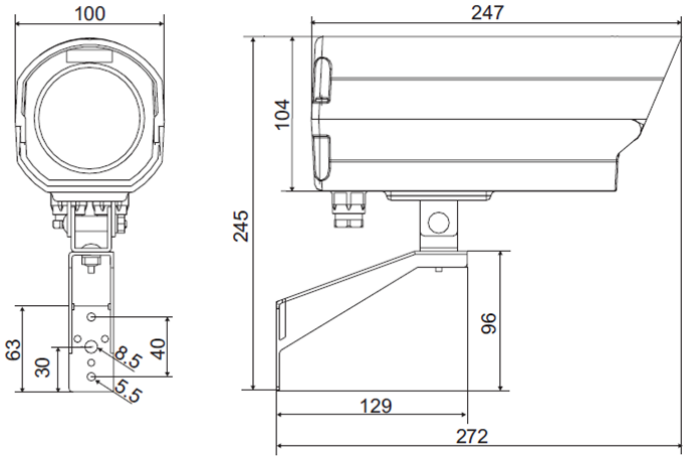


NOTE!

To prevent malfunction or destruction of equipment caused by potential differences, make sure that GND is always connected between all detectors and interface module IFM-485-ST.

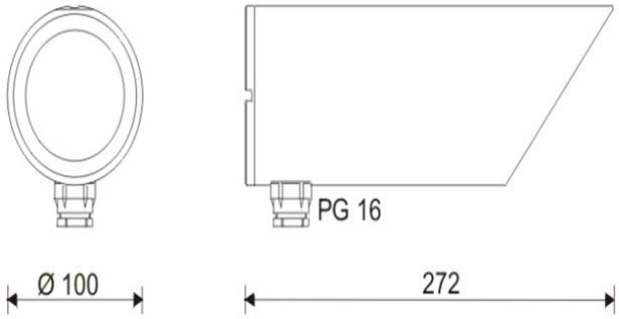
15 Dimensions

All models (except PRO-250H) with metal bracket

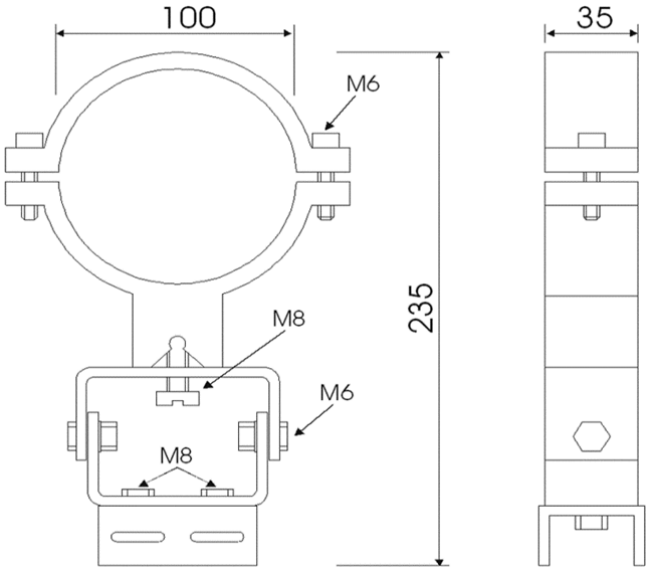


All dimensions are in (mms).

PRO-250H



AD 653 Pole Mount for PRO-250H (optional)



16 Model Specifications

Please note that three versions are to be distinguished:

- Standard version
- High Performance version (H-version)
- High Performance version (H-version) in IP65 version

The H-version is characterized by the following enhanced features amongst others:

- The housing face plate is not IR transparent film, but a mechanical, robust silicon wafer disc specially developed for this application, and characterized by its high permeability to IR radiation, as well as its resistance to sabotage.
- Because of this precise optic greater nominal range compared to standard types can be achieved.
- H versions include a built-in heating mechanism.
- Because of this heating, applicability extends to harsh climatic environments. The detectors can be used in spite of variations in temperature, because the resulting air condensation, which could cause signal attenuation due to water droplets building up on the face plate or the mirror, is counteracted.

The following specifiations are valid for all ADPRO PRO-PIR detector models:

SPECIFICATIONS	All ADPRO PRO-PIR Detectors
Spectral response	8-14µm, double filter
Speed ranges for detection	0,2 – 5,0 m/s
Sensitivity adjustments (% per default setting)	DIP-switch : 40%, 75% 100% Sensitivity or Range, depending on model, see section 16.1 and 16.2.
	PRO software : 20 - 140% depending on models: all single-sensor detectors (18, 30, 40, 45): 20-140% all multi-sensor detectors (51, 85, 100, 250): 50-150%
Window	Standard version : PE-Filter, IR transmissive High-Performance H-versions : Silicon wafer
Vandalism detection of housing	Tilt and housing opening detection (NC contact 30V/100 mA)
Alarm indication	Internal LED
Alarm outputs	PRO-xxx • 1x relais SPST $30V_{DC}$ @ 100 mA max. • 1x open collector $30V_{DC}$ @ 50 mA max. PRO-250H • 1x relais SPST 30VDC @ 100 mA max. • 1x open-collektor 30VDC @ 50 mA max. • 3x optocoupler outputs for one each alarm zone (short/medium/long)
Communication	RS-485, 9,6kBit/s
Temperature compensation	Full compensation over the whole operating temperat. range
Supply voltage	10,5 - $30V_{DC}$, $24V_{AC}$ ±15% (w/o heater)
Current consumption	18 mA @ $12V_{DC}$, 14 mA @ $24V_{DC}$
Power consumption of heater	2W / 176 mA @ 12 V_{DC} and -40°C (H-versions only)
Operating temperature	Standard versions : -20º up to +60°C

SPECIFICATIONS	All ADPRO PRO-PIR Detectors
	High-Performance H-versions : -40° up to +60°C
Cable connection (removable screw terminals)	PRO-xxx 2 x 4-7 mm (0.16" - 0.27") PRO-250H 2 x 6 – 9 mm (P11, 0,24" - 0,35")
Cable glands	PRO-xx Outside cable diameter: Ø 9 – 14 mm (M16) IEC 60423:2007(DIN EN 60423) – cable glands PRO-250H Outside cable diameter: Ø 4 – 10 mm (PG11)
Weight	All PRO-xxx (except PRO-250H) : approx. 900 g, w/ metal bracket PRO-250H : approx. 1,5 kg, w/o bracket
Dimensions (L x B x H) in mm	All PRO-xxx (except PRO-250H) : 247 x 100 x 104 PRO-250H : 272 x 100 x 104
Mounting	All PRO-xxx (except PRO-250H): • Metal bracket (included in delivery) • Pole mount ZA P-L1 (optional) • Cable managed bracket PRO-CMB-W (optional) PRO-250H: • Metal-Pole-/Wall-Mount AD 653 (optional)
IP rating	PRO-xxx: IP54 The following models have been tested by TEA AG, Schweizerischer Prüfstellendienst (Akkreditierungs-Nr. STS 506) to be compliant with the protection rating **IP65**: PRO-18H-IP65 PRO-18WH-IP65 PRO-45H-IP65 PRO-45DH-IP65 PRO-85H-IP65 PRO-100H-IP65 The following models are compliant to **IP66** rating: PRO-85H-IP66 PRO-100H-IP66
Compliance	All ADPRO PRO-PIR detctors are designed to fulfill the following guidelines: UK: **BS8418_Form 172** Basic Guide for Installers (CCTV with PIR trigger) (provided that all detectors are RS-485 cabled and in a permanent online operation mode monitored by an alarm receiving, which requires an interconnection to an intrusion, access control or CCTV security system or an alarm management station)
CE	All ADPRO PRO-PIR detectors have been tested and are certified by the accredited test house HTZ in Zürich (notified body number D.E.07.36/37_2), Switzerland and comply fully to the following standards: • **2004/108/EG** Directive of the European Parliament relating to electromagnetic compatibility • **EN 61000–6–3:2007** Electromagn. Compat. – EMC • **EN 50130–4 +A1+A2:2003 –** Electromagn. Compat. – Immunity

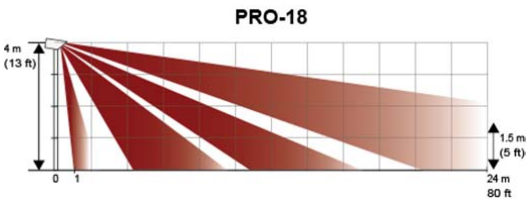
Environmental directives	**All ADPRO PRO PIR detectors meet the following EU directives:** • **RoHS** **Directive 2002/95/EC** Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment • **REACH** **Regulation (EC) No 1907/2006** Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) is a European Union Regulation • **WEEE** **European Community directive 2002/96/EC** The Waste Electrical and Electronic Equipment Directive (WEEE Directive)
Country of Origin	"Swiss Premium Quality" - Made in Switzerland

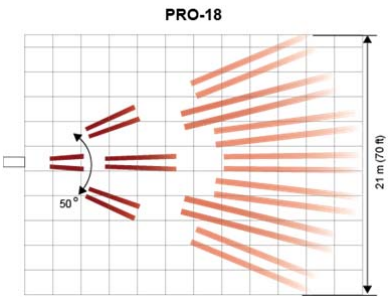
16.1 Volumetric Detectors

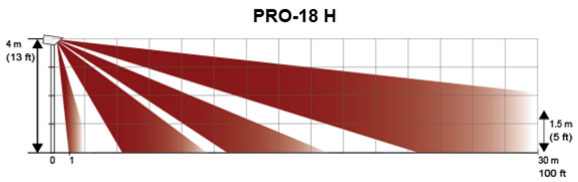
16.1.1 ADPRO Passive-IR-Detector PRO-18 and PRO-18H

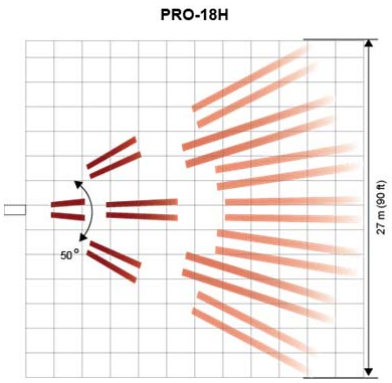
Specifications	ADPRO PRO-18 and PRO-18H
Model Item code	PRO-18: 201885 PRO-18H: 201886 PRO-18H/ IP65 202488
Max. nominal Length	PRO-18: 24 m PRO-18H: 30 m
Nominal Width	PRO-18: 21 m PRO-18H: 27 m
Nominal Aperture angle (AA)	50°
Sensitivity adjustment (% of default adjustment)	DIP-Switch: 40%, 75% 100% PRO-Software: 20 - 140%
Internal Switches	• Sensitivity • ATD • Pulse Counter • Test • Vandalism Detection • Nominal mounting height

Nominal detection ranges





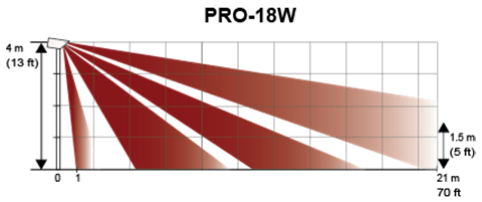


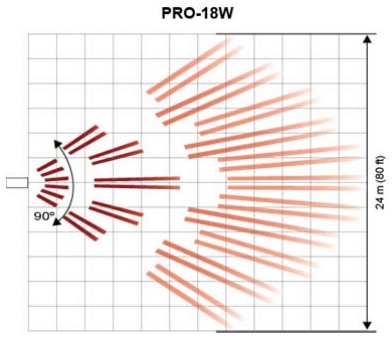


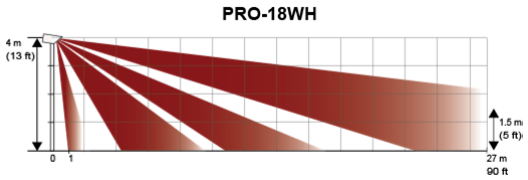
16.1.2 ADPRO Passive-IR-Detector (PIR) PRO-18W and PRO-18WH

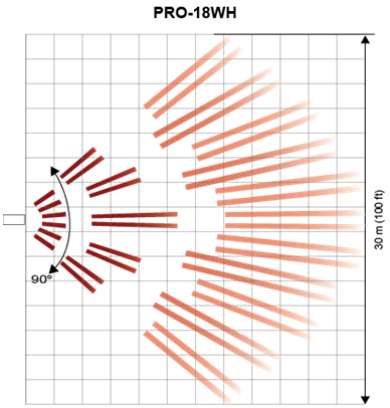
Specifications	ADPRO PRO-18W/ PRO-18WH
Model Item code	PRO-18W: 201313 PRO-18WH: 201727 PRO-18WH/IP65 202489
Max. nominal Length	PRO-18W: 21 m PRO-18WH: 27 m
Nominal Width	PRO-18W: 24 m PRO-18WH: 30 m
Nominal Aperture angle (AA)	90°
Sensitivity adjustment (% of default adjustment)	DIP-Switch: 40%, 75% 100% PRO-Software: 20 - 140%
Internal Switches	• Sensitivity • ATD • Pulse Counter • Test • Vandalism Detection • Nominal mounting height

Nominal detection ranges





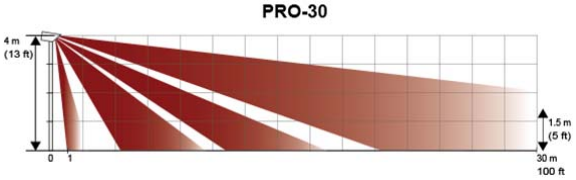


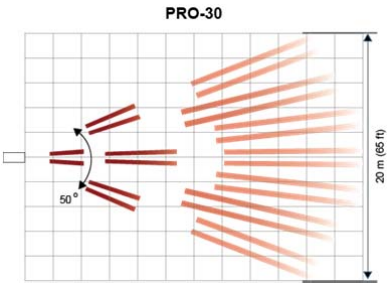


16.1.3 ADPRO Passive-IR-Detector (PIR) PRO-30

Specifications	ADPRO PRO-30
Model Item code	PRO-30: 202383
Max. Nominal Length	30 m
Nominal Width	20 m
Nominal Aperture angle (AA)	50°
Sensitivity adjustment (% of default adjustment)	DIP-Switch: 40%, 75% 100% PRO Software: 20 - 140%
Internal Switches	• Sensitivity • ATD • Pulse Counter • Test • Vandalism Detection • Nominal mounting height

Nominal detection ranges



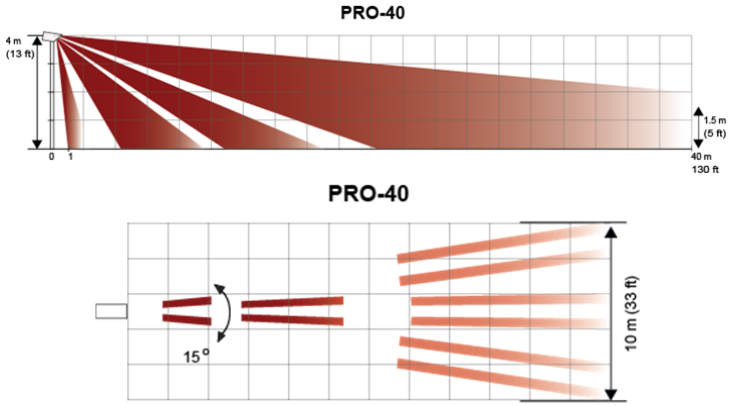


16.1.4 ADPRO Passive-IR-Detector (PIR) PRO-40

Specifications	ADPRO PRO-40
Model Item code	PRO-40: 202384
Max. Nominale Length	40 m
Nominal Width	10 m

Specifications	ADPRO PRO-40
Nominal Aperture angle (AA)	15°
Sensitivity adjustment (% of default adjustment)	DIP-Switch: 40%, 75% 100% PRO Software: 20 - 140%
Internal Switches	• Sensitivity • ATD • Pulse Counter • Test • Vandalism Detection • Nominal mounting height

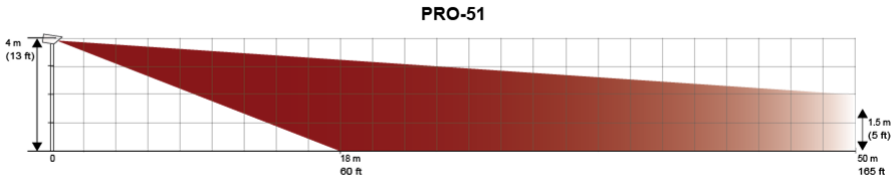
Nominal detection ranges



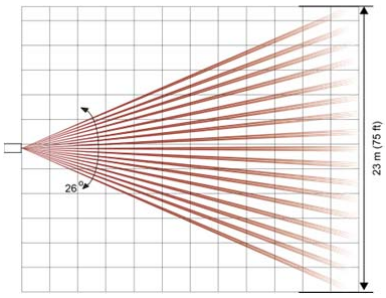
16.1.5 ADPRO Passive-IR-Detector (PIR) PRO-51

Specifications	ADPRO PRO-51
Model Item code	PRO-51: 202385
Max. Nominal Length	50 m
Nominal Width	23 m
Nominaler Aperture angle (AA)	26°
Sensitivity and range adjustment	DIP-Switch: Length: 30, 40, 50 m PRO Software: Length: 30, 40, 50 m Sensitivity: 50 – 150%
Internal Switches	• Range (length) • ATD • Pulse Counter • Test • Vandalism Detection • Nominal mounting height

Nominal detection ranges



PRO-51

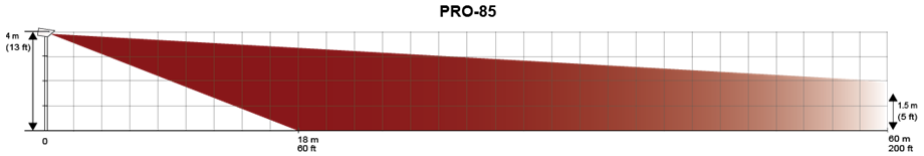


16.1.6 ADPRO Passive-IR-Detector (PIR) PRO-85 and PRO-85H

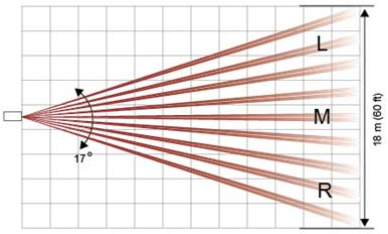
Specifications	ADPRO PRO- 85/PRO-85H		
Model Item code	PRO-85:	201779	
	PRO-85H:	201780	
	PRO-85H/ IP65	202494	
Max. Nominal Length	PRO-85:	60 m	
	PRO-85H:	75 m	
Nominal Width	PRO-85:	18 m	
	PRO-85H:	23 m	
Nominaler Aperture angle (AA)		17°	
Sensitivity and range adjustment	PRO-85:	DIP-Switch:	Length: 30, 45, 60 m
		PRO Software:	Length: 30, 45, 60 m
		PRO Software:	Sensitivity: 50- 150%
	PRO-85H:	DIP-Switch:	Length: 40, 60, 75 m
		PRO Software:	Length: 40, 60, 75 m
		PRO Software:	Sensitivity: 50- 150%
Internal Switches	• Range (length) • ATD • Pulse Counter • Test • Vandalism Detection • Nominal mounting height		

Nominal detection ranges

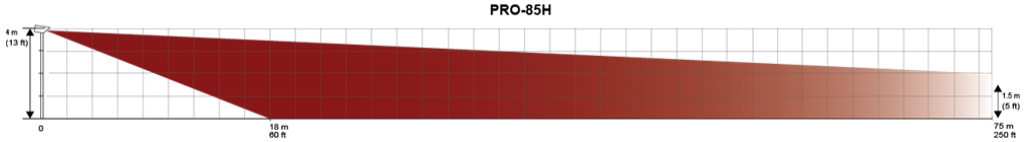
PRO-85

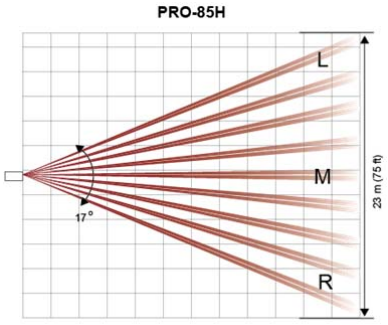


PRO-85



PRO-85H



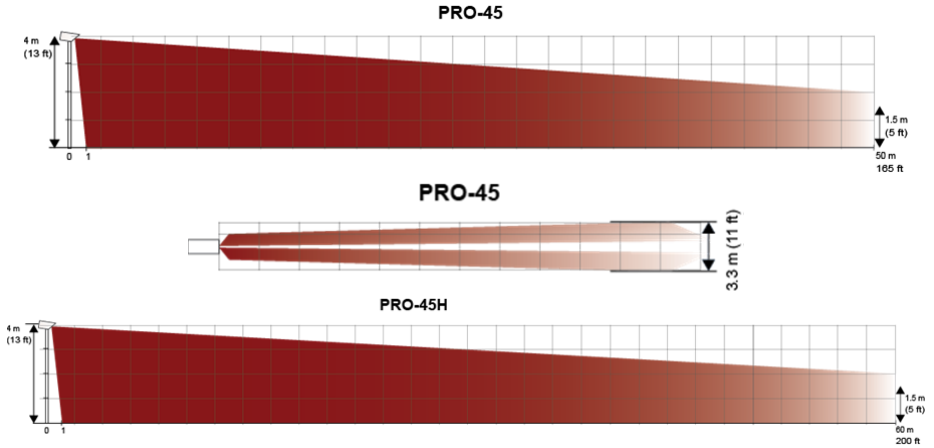


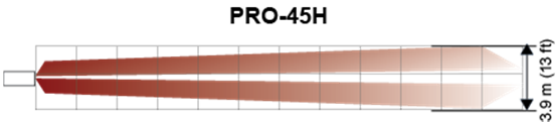
16.2 Curtain Detectors (Barrier Detectors)

16.2.1 ADPRO Passive-IR-Detector (PIR) PRO-45, PRO-45H and PRO-45H-IP65

Specifications	ADPRO PRO-45/PRO-45H
Model Item code	PRO-45: 201312 PRO-45H: 201736 PRO-45H/ IP65 202485
Max. Nominal Length	PRO-45: 50 m PRO-45H: 60 m
Nominal Width	PRO-45: 3.3 m PRO-45H: 3.9 m
Nominaler Aperture angle (AA)	PRO-45: 3.4° PRO-45H: 3.8°
Sensitivity adjustment (% of default adjustment)	DIP-Switch: 40%, 75% 100% PRO Software: 20 - 140%
Internal Switch	• Sensitivity • ATD • Test • Vandalism Detection • Nominal mounting height

Nominal detection ranges

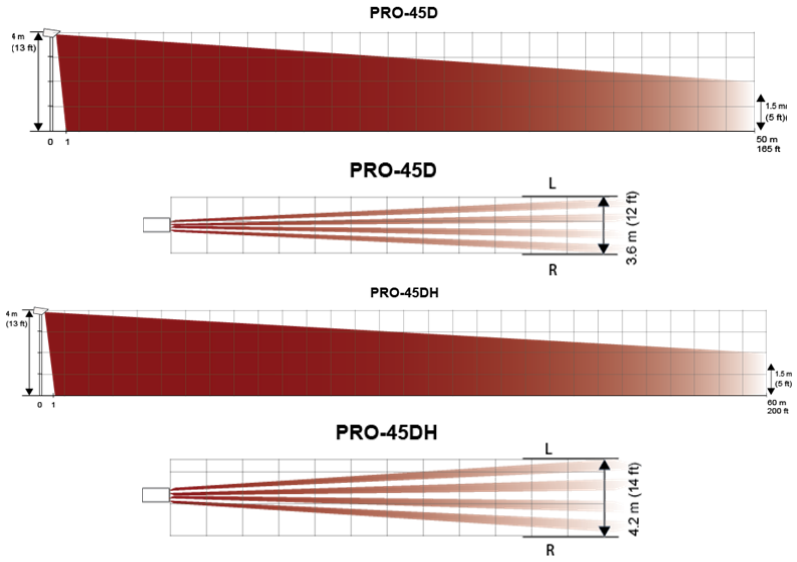




16.2.2 ADPRO Passive-IR-Detector (PIR) PRO-45D, PRO-45DH and PRO-45DH-IP65

Specifications	ADPRO PRO-45D/PRO-45DH
Model **Item code**	PRO-45D: 201735 PRO-45DH: 201737 PRO-45DH/ IP65: 202486
Max. Nominal Length	PRO-45D: 50 m PRO-45DH: 60 m
Nominal Width	PRO-45D: 3.6 m PRO-45DH: 4.2 m
Nominaler Aperture angle (AA)	PRO-45D: 4° PRO-45DH: 4°
Sensitivity adjustment (% of default adjustment)	DIP-Switch: 40%, 75% 100% PRO Software: 20 - 140%
Internal Switch	• Sensitivity • ATD • Test • Vandalism Detection • Nominal mounting height

Nominal detection ranges

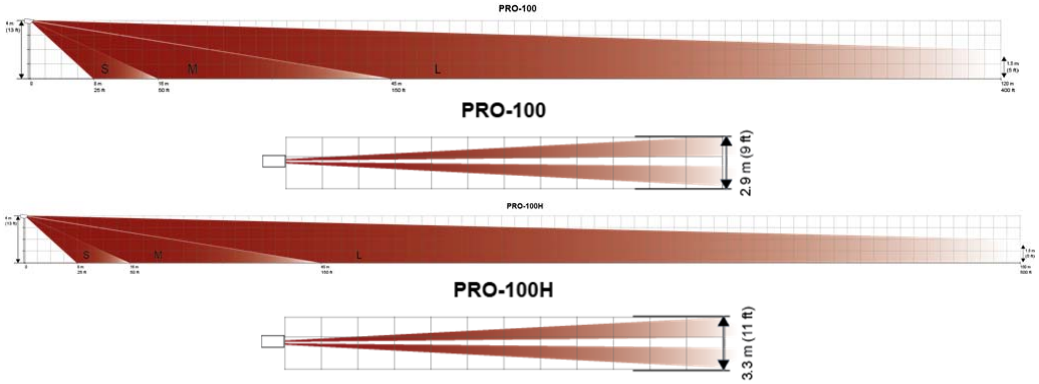


16.2.3 ADPRO Passive-IR-Detector (PIR) PRO-100 and PRO-100H

Specifications	ADPRO PRO-100/PRO-100H
Model **Item code**	PRO-100: 225100 PRO-100H: 201738 PRO-100H/ IP65 202492

Specifications	ADPRO PRO-100/PRO-100H
Max. Nominal Length	PRO-100: 120 m PRO-100H: 150 m
Nominal Width	PRO-100: 2.9 m PRO-100H: 3.3 m
Nominal Aperture angle (AA)	PRO-100: 1.3° PRO-100H: 1.4°
Sensitivity and range adjustment	PRO-100: DIP-Switch: Length: 60, 80, 120 m PRO Software: Length: 60, 72, 84, 84, 96, 108, 120 m PRO Software: Sensitivity: 50 - 150% PRO-100H: DIP-Switch: Length: 75, 105, 150m PRO Software: Length: 75, 90, 105, 120, 135, 150 m PRO Software: Sensitivity: 50 - 150%
Internal Switch	• Range (length) • ATD • Test • Vandalism Detection • Nominal mounting height

Nominal detection ranges

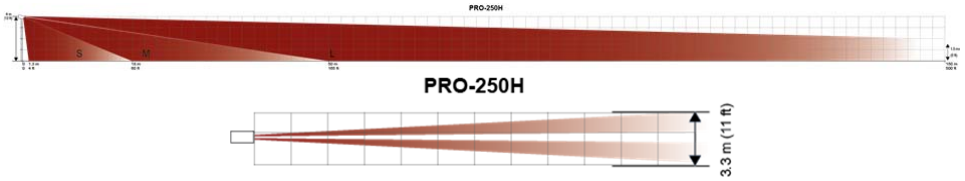


16.2.4 ADPRO Passive-IR-Detector (PIR) PRO-250H

Specifications	ADPRO PRO-250H
Model Item code	PRO-250H 202405
Max. Nominale Length	150 m
Nominal Width	3.3 m
Nominal Aperture angle (AA)	1.3°
Alarm Output	1Relay SPST 30 VDC@100 mA max. Open collector 30 VDC@50 mA max. Alarm zone via 3opto-coupler outputs
Sensitivity and range adjustment	DIP-Switch: Length: 75, 105, 150 m PRO Software: Length: 75, 90, 105, 120, 135, 150 m Sensitivity: 50 – 150%
Internal Switch	• Range (length) • ATD • Test • Vandalism Detection

Specifications	ADPRO PRO-250H
	• Nominal mounting height

Nominal detection ranges



17 Maintenance and Service

17.1 Safety

Personnel

- Work on the electrical system must only be carried out by qualified electricians.

17.2 Environmental Protection

Environmental Damage

CAUTION!
Environmental threat due to incorrect handling!
Incorrect handling of environmentally hazardous substances, especially in the event of improper disposal, can cause considerable damage to the environment. Therefore:

- Always take into account the information provided in the following.
- If environmentally hazardous substances are accidentally released into the environment, take immediate and appropriate measures. If in doubt, inform the competent local authority about the damage.

17.3 Recommendations

The ADPRO® Passive Infrared Detector (PIR) PRO series is maintenance free.

Inspections

The following inspections are recommended:

Visual inspection of the outside:

1. Check the front window for dirt and clean the surface with a damp cloth at least once every 6 months.

Note!

Avoid rubbing dirt into the surface.

Take the same precautions for camera lenses.

2. Check housing for damage at least once every 6 months.

Note!

Check that the sealing gasket is in the right place before closing cover tightly.

Inspections after extreme weather (e.g. snow storm, sand storm, hail):

1. Check the detector for damage.
2. Remove snow, sand or dirt from the front window.
3. Check the detector for reduced sensitivity caused by accumulated snow, sand or dirt on the front window.

18 Troubleshooting

In the event of malfunctions, contact the manufacturer. For contact information see page 2 of this manual.

18.1 False Alarms

Possible Cause	Possible Solution
ATD (adaptive threshold discrimination) is off.	Activate ATD (through DIP switch 3 "on" or PRO software settings).
Animals in the detection area.	Check for animals. If necessary, fence the detection area.
Moving vegetation caused by wind or moving animals.	Check for moving vegetation (e.g. branches or leaves). If necessary, remove or prune the disturbing vegetation.
Sensitivity of the device is too high.	If necessary, reduce the sensitivity. (DIP switch 1&2 or PRO software settings).
Thermal sources.	Check for thermal sources within the range of the device (e.g. kitchen exhaust or exhaust from an air conditioning system). If necessary, adjust the direction of the device or screen away from the thermal sources.

19 Disassembly and Disposal

Once its service life has expired, the device must be disassembled and disposed of using an environmentally safe procedure.

19.1 Safety

Personnel

- Work on the electrical system must only be carried out by qualified electricians.

19.2 Environmental Protection

Environmental Damage

ACHTUNG!

Environmental threat due to incorrect handling!

Incorrect handling of environmentally hazardous substances, especially in the event of improper disposal can cause considerable damage to the environment. Therefore:

- Always take into account the information provided in the following.
- If environmentally hazardous substances are accidentally released into the environment, take immediate and appropriate measures. If in doubt, inform the competent local authority about the damage.

If there is no return or disposal agreement, disassembled components should be recycled as:

- Scrap metals
- Plastic items for recycling
- Other components sorted by material properties

The local authority or a waste disposal specialist will provide information on envinronmentally compatible disposal.

19.3 Measures before Disassembly

Before starting disassembly:

1. Turn off the power.
2. Secure the main switch with a padlock against switching on again.

20 Product Overview

Detection Principle	Model	Code	Nominal Range		Angle
			Length	Width	
Volumetric, medium-range	PRO-18	201885	24 m (80 ft)	21 m (70 ft)	50°
	PRO-18H	201886	30 m (100 ft)	27 m (90 ft)	
	PRO-18H/ IP 65	202488			
Volumetric, wide-range	PRO-18W	201313	21 m (70 ft)	24 m (80 ft)	90°
	PRO-18WH	201727	27 m (90 ft)	30 m (100 ft)	
	PRO-18WH/ IP 65	202489	27 m (90 ft)	30 m (100 ft)	
Volumetric, medium-range	PRO-30	202383	30 m (100 ft)	20 m (65 ft)	50°
Volumetric, medium-range	PRO-40	202384	40 m (130 ft)	10 m (33 ft)	15°
Curtain, medium-range	PRO-45	201312	50 m (165 ft)	3.3 m (11 ft)	3.8°
	PRO-45H	201736	60 m (200 ft)	3.9 m (13 ft)	3.4°
	PRO-45H/ IP 65	202485			
Curtain, directional, medium-range	PRO-45D	201735	50 m (165 ft)	3.6 m (12 ft)	4°
	PRO-45DH	201737	60 m (200 ft)	4.2 m (14 ft)	
	PRO-45DH/ IP65	202486			
Curtain, medium-range	PRO-45Z	202484	50 m (165 ft)	3.3 m (11 ft)	3.3°
Volumetric, long-range	PRO-51	CH10080101	50 m (165 ft)	23 m (75 ft)	34°
	PRO-85	201779	60 m (200 ft)	18 m (60 ft)	17°
	PRO-85H	201780	75 m (250 ft)	23 m (75 ft)	
	PRO-85H/ IP 65	202494			
	PRO-85H/ IP 66	202495			
Curtain, long-range	PRO-100	225100	120 m (400 ft)	2.9 m (9 ft)	1.3°
	PRO-100H	201738	150 m (500 ft)	3.3 m (11 ft)	1.4°
	PRO-100H/ IP 65	202492			
	PRO-100H/ IP 66	202493			
Curtain, long-range, step-down look	PRO-250H	202405	150 m (500 ft)	3.3 m (11 ft)	1.3°
Accessoiries					
AD 653, pole-mount for PRO-250H	ZA P 100-U1	220103	Standard pole-mount with stainless steel clamps		
pole-mount for PRO-250H	ZA P 100-M1	on request	Special pole-mount for heavy duty applications		
Pole-mount for all detectors	ZA P-L1	201753	Do not use for ADPRO PRO-250H		
Cable Managed Bracket	PRO-CMB-W	CH18310001			
Tamper Switch (retro-fit) for CMB	PRO-CMB-S	CH18320001			
Interface Module, RS-485 Bus	IFM-485-ST	CH19000301			
PRO-Telescope	ZA P 03	242600	Alignment Telescope		
Walk Tester, wirelss	CT PRO 2	202483			

Ex-Barrier, RS-485	PRO-SBB IS	CH19200001	For use with Intrinsically Safe detectors only
Ex-Barrier, contacts	PRO-SBC IS	CH19200101	For use with Intrinsically Safe detectors only
Power Supply for Ex-Barriers	PRO-PS2 IS	CH19210001	For use with Intrinsically Safe detectors only

Obsolete (these item codes are no more available)			
	CT 44		
Walk Tester	CT 45	201909	
Walk Tester	CT PRO	202465	
Volumetric, long-range	PRO-50	202385	
Interface Module, RS-485 Bus	IF 485B	201908	

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The Americas +1 781 740 2223 **Asia** +852 2916 8876 **Australia and New Zealand** +61 3 9936 7000
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